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CLEAR CHOICE TEST VIRTUAL DESKTOP INFRASTRUCTURE

VMware View, Citrix XenDesktop win VDI software shootout

Nine products offer cost-saving alternatives
to traditional desktops

VDI ROUNDUP

VMware View, Citrix XenDesktop
are top choices for VDI software.
PAGE 24

Pano Logic wins hardware test.
PAGE 30

How Microsoft does VDI. **PAGE 26**

Go online to see how we tested
VDI products. <http://tinyurl.com/ybu22c8>

Microsoft's 2010 task: Make the cloud clear

BY JOHN FONTANA

FOR MICROSOFT, 2010 is expected to be a platform building year with no less than the future success of its cloud strategy hanging in the balance.

Microsoft's charge is not only to begin developing and delivering technology that will define its external, internal and hybrid cloud environments, but to clearly articulate to an overwhelming majority of corporate IT pros just how and why they want to live in a cloud.

In addition, there will have to be answers to questions around such issues as security, compliance and performance from those very users.

"In terms of the cloud, it is important for Microsoft to be on the right trajectory; it's not necessarily important to their business from a revenue standpoint to capture lots of revenue out of the cloud in the next 24 months," says Al Gillen, program vice president for system software at IDC. "But if they don't get in line to compete, they put themselves at a significant risk of being not there when real money starts to get spent in this space."

Microsoft clearly has work to do across its product line to define the cloud as part of its software-plus-services and three-screens-and-a-cloud strategies.

"Our initial focus was to make it easy for the
See Microsoft, page 20



SharePoint add-ons make system sexy again

We take a look at a host of add-ons that make the existing SharePoint package seem new again. **Page 10**

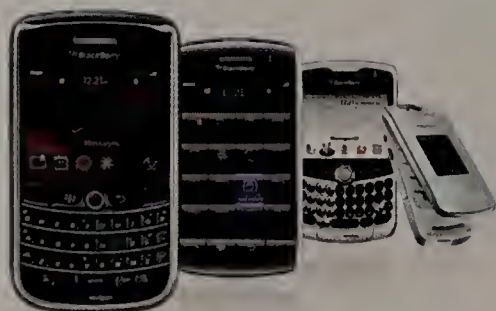


Augmented reality comes to mobile devices

New tools let smartphone users overlay digital data on live video. **Page 12**

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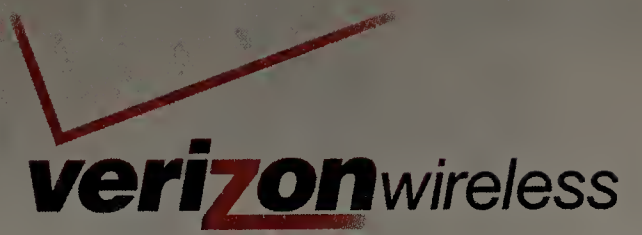
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GOODBADUGLY



Sexting overblown?

A new study finds that 15% of teens who own cell phones have received nude photos or sexually suggestive text messages and that just 4% say they have sent such messages. The Pew Internet and American Life Project numbers, based on interviews with 800 teens across the United States, are lower than those from previous surveys from other outfits. The news is good for parents, since the survey also found that even tight parental controls on the phones don't make a huge difference.

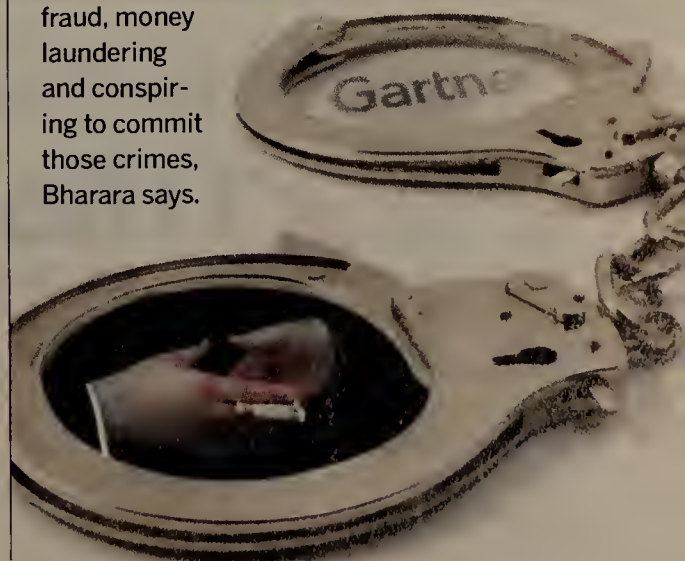
Help wanted by CIOs

CIOs could use a lot more help on their IT staffs, but unfortunately aren't in a position to do much hiring. A phone survey by Robert Half Technology of more than 1,400 CIOs from companies across the U.S. with 100 or more employees, found that 43% of CIOs said their IT departments are understaffed in relation to workloads. Health services industry CIOs in particular are hurting for help, with more than half of them complaining of understaffed workforces.



Ex-Gartner manager getting jail time

A former manager at the Gartner research firm was sentenced to four years in prison for steering \$3.1 million in multimedia contracts to two outside vendors in return for kick-backs. Benjamin Cardona also has to forfeit \$222,182.13 collected during the period September 2002 to March 2005 when he accepted the bribes, according to U.S. Attorney Preet Bharara. Cardona pleaded guilty May 4 to commercial bribery, mail fraud, money laundering and conspiring to commit those crimes, Bharara says.



Traffic jam for AT&T

Re: AT&T lashes out at Fake Steve Jobs' network knock-out threat (<http://tinyurl.com/yz7m8py>):

The idea that the network alone is the problem is farcical. AT&T's customer satisfaction ratings were nicely average before the iPhone. The air interface was always a concern on the 2G and 3G iPhone. I understand it is improved in the 3GS, but you can hardly expect an iPod/laptop company to do the RF bit right the first couple of times around. I'll stick with a company whose business has been handsets for a while just like I'll stick with a camera company for my digital camera needs. I already hear the complaints from Droid users about the Verizon network slowing down. Every network operator is going to have to deal with capacity issues when it comes to back-haul at the least.

Anonymous

Not that you should build a highway to handle every car at once... but you should plan on and build according to the traffic you expect. It does no good to build a big city and only have a two-lane road go get in and out (one way each lane). When AT&T signed an exclusive contract for the iPhone and makes you buy a minimum data plan then they know how many phones will be out there and just how much traffic they may expect... no, they should not build to cover every phone being used at one time, but at least be able to cover 75% usage. From what I have read they are not even covering that... and blaming the user (who purchased an iPhone and expects to use it) for their issues.

Anon

Don't take Facebook at face value

Re: Bank's antifraud tactics stun security expert: How much do they know? (<http://tinyurl.com/ycov293>):

I think the even bigger point is how can the bank be sure that the Facebook person is one and the same as the one checking out of the London airport.

They have absolutely no way of knowing. HackerZero, for example, could put up a complete "misinformation" Facebook page, with

a 'fake daughter-in-law' and then, at the airport, this guy could be saying, "I do not have a daughter-in-law, what the heck are you talking about?"

That is the huge point about this whole thing — that a supposedly reputable bank is basing verification on a site that has questionable data (Facebook).

Bottom line: If I did not provide the bank with the information, then there is no way that they should be able to "run the gauntlet" on me, by using questionable information they've gathered somewhere else — can you not see what a "hacker dream" this is?

JM

It's for reasons like this that I never put completely true information on those so called "social networking" sites. My birthday, home address and any other truly personal information is not true. It has no purpose to be there. A true friend will know it and anyone else has no need to. I also don't use any of the applications on those sites as they collect all of your information and that of your friends, so why give it up so easily. Setting everything to be viewable by only friends and not any of the extended groups available also helps I believe. People can't even see my picture or friends list if they haven't already been made a friend. It just seems like a good way for me to take care of myself.

Bear

Get paid to text?

Re: Supreme Court to consider texting-in-workplace privacy case (<http://tinyurl.com/yeta42m>):

Let's see... the device was issued on the job. The job is funded by the taxpayer. The texts were personal um "business" — yup the cop is guilty. I want my cops to be doing their jobs not making dates or innuendo with the local girls.

I feel the same way about e-mails at work. Inneroffice memos OK, but e-mailing the boyfriend while you are supposed to be working? No way. That's why you are not supposed to make personal calls from your job. I am not paying you to broaden your social networking. I am paying you to work.

Frances

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BLOGOSPHERE

■ **Cisco, others see Ethernet switches emerge from the bottom.** Cisco Subnet reports that sales of Ethernet switches grew for the second quarter in a row, according to Infonetics Research, an indication that the market is coming off the bottom of the recession. The Ethernet switch market grew 5% sequentially in the third quarter, to \$3.5 billion, Infonetics found. Stabilization in spending from businesses, as well as public sector spending and stimulus programs in Asia Pacific and North America, were factors in the quarter. Sales of 10G ports jumped 46% and are up 61% from last year, according to the firm. Most of the top Ethernet switch vendors posted single- to double-digit percent revenue gains in the quarter. Enterprise router sales also grew in the third quarter but have previously languished due to businesses deploying less expensive products or not opening new branch offices. The market may also have been frozen while waiting for Cisco's new ISR G2 routers — after all, Cisco owns more than 80% of the enterprise router market. So router sales are expected to pick up in the coming quarters as ISR customers refresh their networks, according to Infonetics analyst Matthias Machowinski. In Q3, meanwhile, worldwide enterprise router revenue was up 5% sequentially to \$746 million. Cisco increased sales by 7% in the quarter, but Adtran was up 18% from Q2, Infonetics reports. <http://tinyurl.com/yd7cwxxh>

■ **Got Facebook privacy concerns?** You ain't seen nothing yet. The Alpha Doggs blog notes that Carnegie Mellon University researcher Tom Mitchell says that privacy risks "on a scale that humans have never before faced" hinder real-time data analysis that could be used to solve health, traffic and human behavior problems. Mitchell outlined his ideas in a column of the journal *Science*. Of course privacy in an increasingly online world continues to grab headlines, the latest regarding Facebook's controversial privacy setting changes. Mitchell, head of the Machine Learning Department in CMU's School of Computer Science, says privacy will be a growing concern as data mining techniques expand to usage related to more personal activities. Such expansion could include monitoring smartphones for the purpose of reducing traffic congestion or even giving people a head's up if they've been near someone with a contagious disease, Mitchell says. While privacy concerns are considerable, Mitchell says that technical solutions can be developed to address such concerns, such as mining data across organizations without aggregating it in one repository. <http://tinyurl.com/yk7mqas>

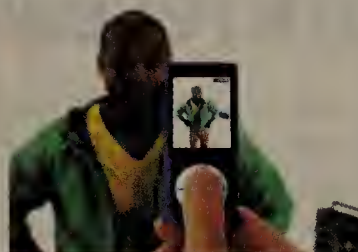
ITVIDEO Interviews, the Coolest Tools and More



IDG News wire

2009 Year in Review: Microsoft

2009 was the first year where Bill Gates didn't have a hand in day-to-day operations; he passed that baton to CEO Steve Ballmer. The company launched a new operating system and search engine. <http://tinyurl.com/y9tr556>



IDG News wire

2009 Year in Review: Apple

2009 was a good year for Apple with a bevy of new products including new MacBooks, iPods and a new iPhone. It also saw the return of CEO Steve Jobs. <http://tinyurl.com/ybow7cr>



IDG News wire

Final Fantasy XIII launches in Tokyo

Final Fantasy XIII went on sale last week in Japan. Several hundred people queued in the pre-dawn cold in Tokyo's Shibuya district to buy the game when sales began at 7a.m. <http://tinyurl.com/ycapdnu>



Best of NWW's
NEWSLETTERS

Standards for protecting personal information

IT best practices: The U.S. federal government is pitifully behind the times in establishing legislation for the digital age. As a result, we have few laws, standards or guidelines that provide one universal way to conduct business in the electronic era. States try to fill this gap with their own legislation, and we end up with a patchwork of laws that apply only in certain instances. For example, California was one of the first states to establish a stringent law requiring public disclosure of a data breach involving information about a California citizen. But this presents a problem for businesses throughout the country, not just in California. Suppose an e-tailer in Virginia has a data breach and some of the compromised records included cardholder data for Californians. Technically, that business needs to follow the letter of the California law, even though the business is based in a state 3,000 miles away. And if Virginia has no breach disclosure law, the only notices that must be sent are to the Californians; Virginians whose records were compromised may not have to be notified. It's so confusing — why can't we have one universal law that covers activity in every state in the same way? Now the state of Massachusetts

has developed standards for the protection of personal information of residents of that state. <http://tinyurl.com/ya6kdyv>

Network architecture: The public network will continue to gain speed. In IDC's predictions for IT advancements in the coming year, the research firm says to expect "massive, aggressive" network buildouts. Fixed broadband will continue its strong migration to fiber optics. IDC says that major players have stated they are looking to bring 100Mbps of bandwidth to people's homes at reasonable prices. That means a lot of fiber; either fiber to the home or fiber to the neighborhood. IDC predicts that almost 2 million more homes will have fiber connections to the Internet, bringing the total penetration of fiber to 10% of consumers. IDC also says fiber broadband subscribers will represent 40% of "net-new" subscriber growth in 2010, and 75% of that growth by 2013. There are several drivers for this broadband buildout — not the least of which are the rapid expansion of online video and cloud-based services. One other interesting driver is the rapid growth of mobile devices and applications. <http://tinyurl.com/yd3lssk>

Raytheon BBN gets \$81M to build network research center

Raytheon BBN Technologies was awarded an \$81 million contract by the Army Research Laboratory to build what the company called the largest communications lab in the country. With the five-year contract, the company will take on research in network science to identify diverse network similarities, the company said. Raytheon BBN Technologies will lead a consortium called the ARL Network Science Collaborative Technology Alliance, which will examine communication, information, and social and cognitive networks. The ARL will include leading researchers from all of these disciplines and will aggregate more than 30 university and industrial labs.

<http://tinyurl.com/ya2wsqf>

Oracle earnings jump 15% in Q2.

Oracle last week reported second-quarter earnings of 29 cents per share, a rise of 15% over the same period last year. Total revenues rose 4% to \$5.9 billion and net income jumped 12% to \$1.5 billion. New software license revenues, a key indicator of growth and stability, were up 2% to \$1.7 billion. The economy generally seems to be getting better, said Oracle President Safra Catz (above). "We're definitely seeing customers back buying," she said. The company also expects European regulators "to unconditionally clear" its acquisition of Sun in January, Catz said. Sun will quickly improve its market share and financial performance once the merger closes, Oracle CEO Larry Ellison said.

<http://tinyurl.com/yahy2h2>



process management vendor, for an undisclosed amount. BPM software helps companies develop, implement and manage business processes, such as the steps involved in hiring help or buying supplies. IBM's WebSphere product portfolio already includes a wide range of BPM software, but IBM has been looking for an acquisition that could help it sell BPM to line-of-business executives, rather than IT staffers, "and Lombardi surely fills that gap," Forrester Research analyst Clay Richardson said. "Of course, this will introduce further stack confusion, but if executed properly it could parachute IBM into successful deals led by line of business managers."

<http://tinyurl.com/yb56hes>

Data center project covers 11-acre roof with solar panels. A large data center collocation provider in Phoenix is starting an ambitious project to cover its roof in solar panels and provide up to 4.5 megawatts of power to customers. CEO George Slessman of i/o Data Centers says covering the 11-acre data center with thousands



of solar panels will cost \$8 million to \$10 million, with the project being completed over the next year. "Right now, it's not really an economic solution if you just do the math," Slessman says. "It's more expensive than just buying the power from the utility, but we really see it as future-proofing the business. Our assumption is that power costs are going to go up drastically over the next five to seven years."

<http://tinyurl.com/y8gk25u>

Hackers take Twitter offline. Microblogging site Twitter went offline for a while last week after hackers calling themselves the Iranian Cyber Army managed to change DNS records, redirecting traffic to another Web page. Instead of the usual Twitter Web site design, visitors to the site instead saw a black screen with an image of a green flag and Arabic writing. The defaced site also included a message that said, "This site has been hacked by Iranian Cyber Army." Twitter blamed the outage on changes made to the company's DNS records, which match the company's domain name with the IP addresses of its servers. "Twitter's DNS records were temporarily compromised but have now been fixed. We are looking into the underlying cause and will update with more information soon," Twitter said on its Twitter Status page.

<http://tinyurl.com/ye7g8bp>

New broadband projects, funded by the U.S. government, will open up economic and educational opportunities in rural northern Georgia and other states, Vice President Joe Biden said last week. He called the first round of broadband grants and loans, announced last week, an "historic investment" for people in Georgia, New York, Maine and other states receiving \$182 million in economic stimulus funding from the U.S. government. Last week's announcement was the first of \$2 billion in broadband grants and loans President Obama's administration will announce over the next month and a half. Over the next year, the Rural Utilities Service and the National Telecommunications and Information Administration will award about \$7.2 billion for broadband deployment projects. The money comes from the giant \$787 billion American Recovery and Reinvestment Act approved by Congress early this year.

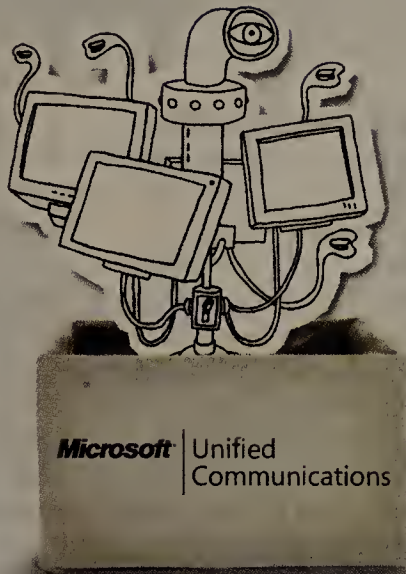
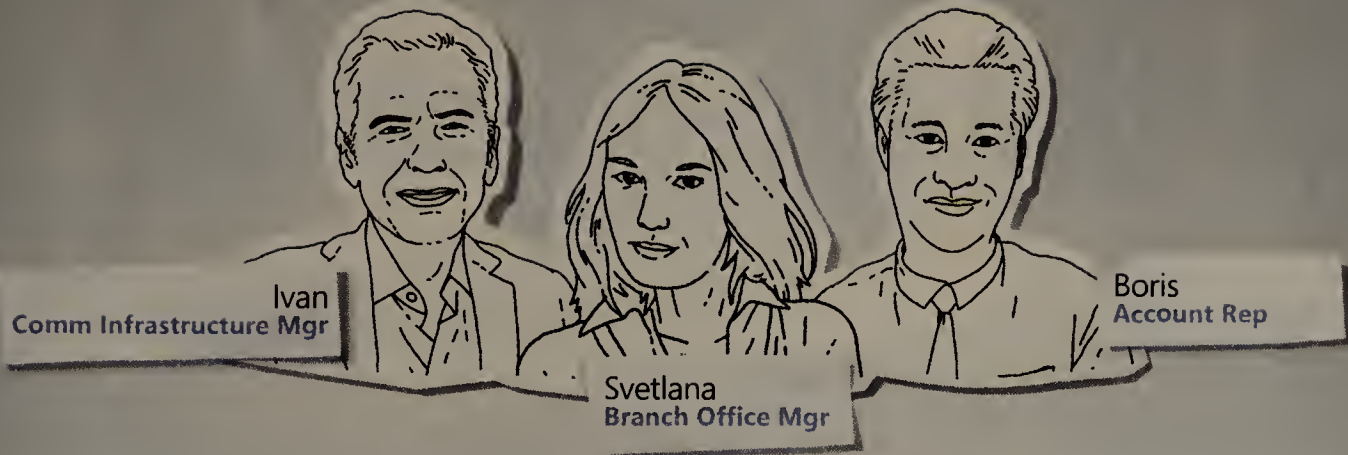
<http://tinyurl.com/yct2ylg>

Asustek plans EeeBot educational robot.

Asustek Computer plans to develop an educational robot for kids called the EeeBot along with software and services as part of several technology projects sponsored by the Taiwan government. The goal is to build an affordable robot able to interact with children. Asustek will work on hardware and software as part of the project, which will involve technologies such as human robot interaction, voice and visual technologies, and positioning and navigation. Asustek is one of Taiwan's biggest computer makers and pioneered the netbook movement with its Eee PC.

<http://tinyurl.com/ybnwzl8>

IBM buying BPM vendor Lombardi. IBM signed a deal to buy Lombardi, a business



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SharePoint add-ons shine

Six SharePoint tools showcase what's slick as 2010 version waits in wings

BY JOHN FONTANA

SharePoint 2010 may be on Microsoft's immediate road map, but users churning away on the current 2007 platform can still juice their rollouts with a host of add-ons that make the existing version seem new again.

From administrative tools to storage options, life-cycle management and migration wares, the task of pushing SharePoint to another level doesn't mean eyeing 2010's feature set, which includes a new platform theme, along with integration of Visual Studio development tools, a revamped SharePoint Designer, new social computing features, a more secure runtime environment for application components and a set of cloud-based APIs that open SharePoint to technology's hottest trend.

With 2010's ship date not until May at the earliest, here is a look at a half dozen tools that can make SharePoint 2007 (or earlier) sing. And not to leave 2010 completely out of the equation, the vendors of these tools have provided a stay-tuned peek at what they plan to do on the new platform.

BlueThread (Storage)

BlueThread offers a storage add-on for SharePoint to improve content management by moving data off the platform's traditional SQL Server storage repository.

BlueThread's StoragePoint for SharePoint plugs into the Microsoft server and lets users configure endpoints by site collection or Web applications so they use different storage nodes located either on-premises or in the cloud.

StoragePoint offers an interface to redirect where Binary Large Object (BLOB) I/O are stored. Traditionally, BLOBs are stored in SQL Server (SharePoint's back end).

From a SharePoint perspective there is really no operational or functional difference," says Rob D'Oria, CTO of BlueThread. "Uses can move content that is not mission critical off to second- or third-tier storage" that is less expensive.

The only thing stored in the SQL Server database is metadata, which ensures that indexing and other functions are not interrupted.

D'Oria says StoragePoint can reduce the size of an SQL Server database by 95% to 98%, and the technology offers compression and data encryption.

In 2010, BlueThread will tap into the SQL interface coming in SharePoint 2010 called Remote BLOB Storage (RBS) to provide a second interface for externalizing content.

Colligo (client integration)

Colligo takes SharePoint add-ons to the client side, offering tools that integrate with Outlook, Windows Explorer and SharePoint content.

Colligo has a synchronization engine that keeps data on the client in sync with SharePoint, says Barry Jinks, Colligo's CEO and founder. The company's claim to fame is its rich support for content types and metadata.

The most popular Contributor interface is the add-in for Outlook, which takes SharePoint libraries and lists and puts them in folders within the folder tree of the e-mail client. Users can drag-and-drop content into those folders from their in-box or their desktop. And the add-in works online and off and can convert attachments to SharePoint links as part of its attachment management capability.

The other Contributor interfaces are available in the pro client or individually. The pro client has a stand-alone interface with offline support, Windows Explorer integration and the Outlook add-in.

Jinks says 2010 will bring lots of new features in the content management and records management area. In the first half of the year, Colligo will offer new functionality around those capabilities. Also Colligo will offer support for all the 2010 desktop applications, including metadata editing in Word, Excel and PowerPoint.

Metalogix (Migration)

Metalogix's SharePoint Site Migration Manager is designed to help users who are evolving from more ad-hoc or basic deployments of SharePoint to a more enterprise structure.

The tools help users migrate between SharePoint servers or between versions of the technology. "Since SharePoint is still a novel collaboration platform, when most companies deployed it they did it in an experimental fashion," says Rasool Rayani, product

management director at Metalogix. Rayani says now those users want to reorganize their content and structure.

Metalogix also is branching out to migrations from on-premises deployments to the cloud, which is becoming one of the most popular migration paths, Rayani says. In addition, Site Migration Manager can help migrate SQL Server from one version to the next.

Metalogix has a cut-and-paste interface and migration encompasses sites, libraries, lists, Web parts and permissions. For cloud migrations, Metalogix has a Windows client that installs on XP, Vista, Server 2003 or 2008 and connects to SharePoint using Web services.

In 2010, Metalogix plans to support migrations from the 2003 version to the 2010 version of SharePoint. The technology also will support migrations from 32- to 64-bit versions of the server. Metalogix also will add server consolidation features and tools to move existing metadata into the SharePoint 2010 repository.

Nintex (Workflow)

Nintex Workflow for SharePoint lets users create workflows to handle everything from top-down corporate business processes to minor workflow chores.

The server-based software adds a Web-based interface to SharePoint via a set of extensions. The result is new menu options for creating or managing workflows. The interface provides a WYSIWYG, drag-and-drop environment built on HTML and AJAX.

The tool uses standard Windows Workflow Foundation activities and builds a visual XML description of a workflow, according to Mike Fitzmaurice, vice president of technology for Nintex.

SharePoint runs the workflow using its own native workflow engine with Nintex enhancing the capabilities of that platform. Nintex fits between the limited capabilities of SharePoint Designer and the complexity of Visual Studio development.

"You get 90% of Visual Studio's power and 90% of the simplicity of Designer," Fitzmaurice says. He says the strength is the design environment and the ability to track workflows across server farms.

Nintex has a feature called "lazy approval" that lets users complete a workflow task simply by responding to an e-mail and without having to click on a link.

In 2010, Nintex will be focusing on
See Special Focus, page 14

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A new way of seeing, and being?

New tools let smartphone users overlay digital data on live video

BY JOHN COX

Augmented reality is a coalescing of technologies that promises to create a new interactive relationship between mobile users and their surroundings. It's easy to make AR sound like the latest technology in search of an application, but an analogy with jet fighter pilots might help.

Pilots look through the cockpit window, or a helmet faceplate. The inside of these surfaces is treated to display transparent images of cockpit controls and navigation data, a technique called "head-up display." Data, images and text overlay a view of the real world.

Smartphones now can apply that basic concept using very different technologies and take it to another level: adding data about the phone's location and orientation to relate the data overlays to the actual objects you can see onscreen through the phone's camera: buildings, streets and monuments.

You're able to "augment" the reality you see with data drawn from a variety of different online sources, such as Wikipedia, YouTube, Flickr, or commercial content providers. Typically a middleware server application acts as an intermediary, and pulls down the geotagged remote content. The client application runs the calculations to position the content with the "point of interest" on the screen.

The mapping of data to image is done by using the phone's GPS data to pinpoint the location, coupled with its onboard accelerometer and compass to figure out the phone's orientation and the direction in which it's pointing. In the future, the mapping can be made more precise and personal by factoring in the user's identity.

Uncovering, discovering reality

Another example of AR in action is an early 2009 AR application from SPRXmobile, which lets you find automated teller machines (ATM) from ING in The Netherlands. You point your Android phone's camera in a given direction, and information about nearby ATMs will pop up. SPRXmobile released the technology last June as Layar, billed as the world's first augmented reality browser.

Yelp, the social ranking site, introduced an AR application for the iPhone 3GS at the end of August. In one YouTube demonstration, the reviewer described it as a "ranked reality," enabling the phone's user to stand in front of a restaurant and see ratings of it created and

posted by other Yelp users.

In the last few months an array of AR browsers, applications and software developer kits, have been surfacing in the market, offering a growing number of developers the chance to explore what can be done when an object, place or person is augmented with additional information.



New augmented reality tools let mobile users geotag points of interest, like AT&T Park in San Francisco (shown), add their own content, and share it via social networks.

Metaio has just opened the API to its junaio AR platform, which includes a 3D engine. It's a consumer-oriented adaptation of its Unifeye business-to-business AR platform, which combines the company's code with the Adobe Shockwave player to let developers create and insert 2D and 3D images and animations directly into live video streams, and integrate images from the user's surroundings. With junaio, users can create 3D scenes, map them to points of interest, share them with friends and make 360-degree searches via Google Local Search for junaio scenes created by others.

Version 3.0 of the Layar Reality Browser, from Layar, was released in early December after its first introduction in mid-year. The name refers to the fact that the browser's image can be "layered" with data from various sources, creating in effect different perspectives on the same object or location. One addition in 3.0 is cookie support to authenticate users. Masternaut 3X used this to create a closed layer, open only to a client's employees, to track automobile or truck fleets: the employee points the phone's camera at a street or parking lot and sees any fleet assets tagged with a symbol, and accompanying details.

Novelty gives way to new vision

These and similar tools are cropping up in a variety of travel/tourist and navigation applications,

as well as in games. Many "applications" are nothing more than novelties, though the U.S. Army as far back as 2003 was using AR technology in prototype combat training systems. There's a flurry of marketing applications that border on outright gimmicky: both *Popular Mechanics* and *Esquire* created issues that users can hold up in front of a PC-based Webcam and, via a downloaded AR client, see additional images, video, and text, in 2D or 3D, that seem to pop out from the page.

Other examples include interactive AR kiosks set up in retail stores. Customers can hold up a brochure or a product box or package before the kiosk's camera, and see a variety of overlaid and associated information and media.

A range of industrial AR applications, often with special helmets or goggles, are intended to provide specialists, such as mechanics, with context-specific images and data for a task, such as voice, text and animations showing how to install a new part on an engine. BMW has a YouTube "concept" video showing exactly this.

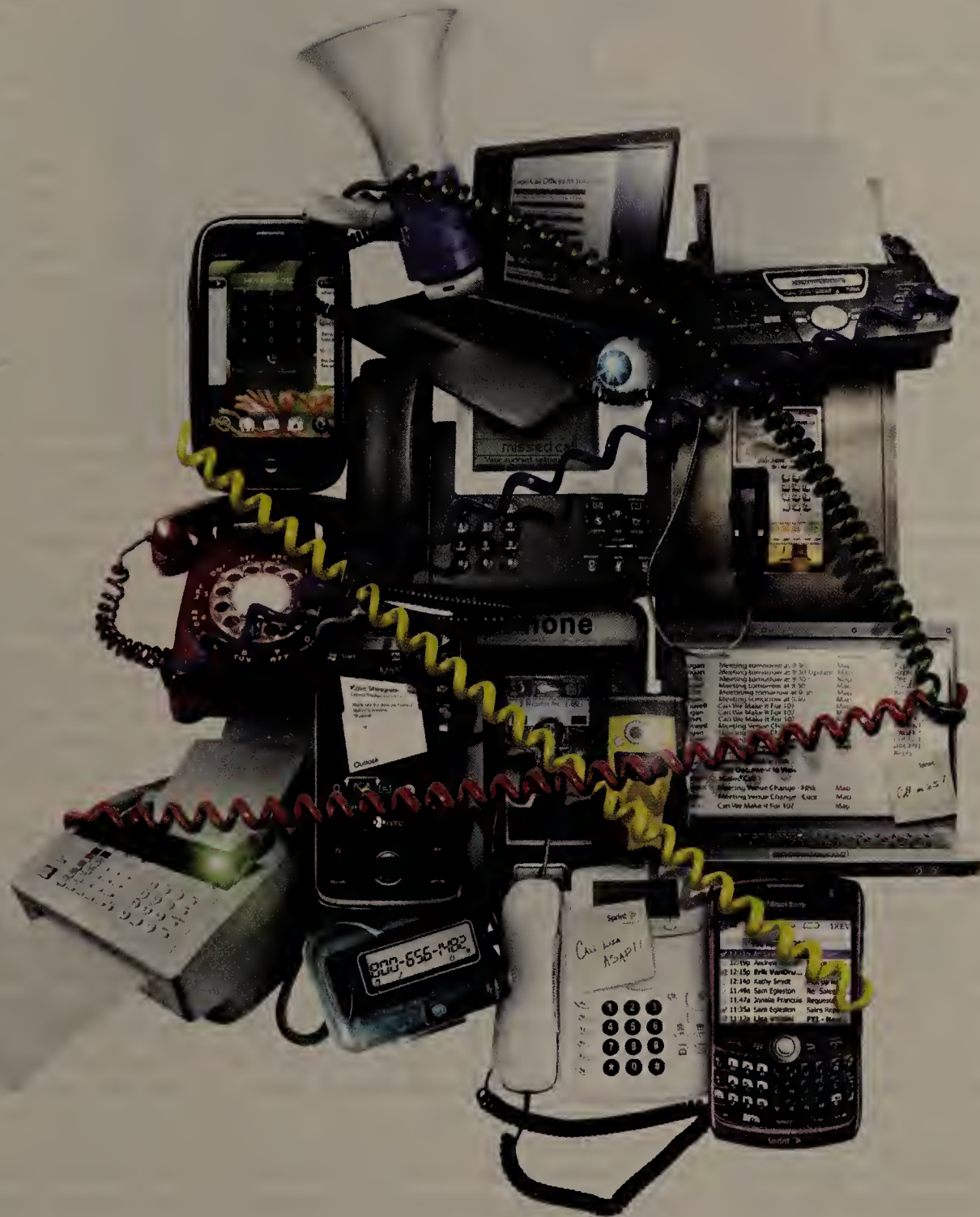
More suggestive is the work by Columbia University AR researchers for the U.S. Marines in creating a proto-

type AR system — a headset and Android-based G1 smartphone — for mechanics doing maintenance work on a light-armored vehicle. The system displayed text instructions, floating labels, 3-D arrows pointing to various components, and animated 3-D models of tools and steps in the repair process. The wrist-mounted G1 phone provided touchscreen controls for queuing up the next sequence of instructions.

The AR mechanics on average were about twice as fast in finding and starting a repair task compared with a control group using a headset that only showed text instructions and another group that used a stationary computer screen, according to the study.

There's growing interest in applying AR to all grade levels of education. An example of the potentiality can be found in the work of Massachusetts Institute of Technology Professor Eric Klopfer, author of "Augmented Learning: Research and Design of Mobile Educational Games," and director of the MIT Teacher Education Program, where AR's role in teaching and learning is being explored. One recent mobile AR game is TimeLab, which starts with a video putting the players in a future Cambridge, Mass., (MIT's home) devastated by global warming. They're sent back to the present day to travel around today's MIT campus and collect real and

See **Augmented reality**, page 14



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■ Special Focus, from page 10

SharePoint 2010's new document assembly services, which will let Nintex compose, manipulate, print and render documents in unique ways entirely from server-side workflow processes.

"That was really hard before," Fitzmaurice says.

He also says there are data access features coming in Nintex Workflow for 2010 that can grab data from different locations and mix them together via a SharePoint process.

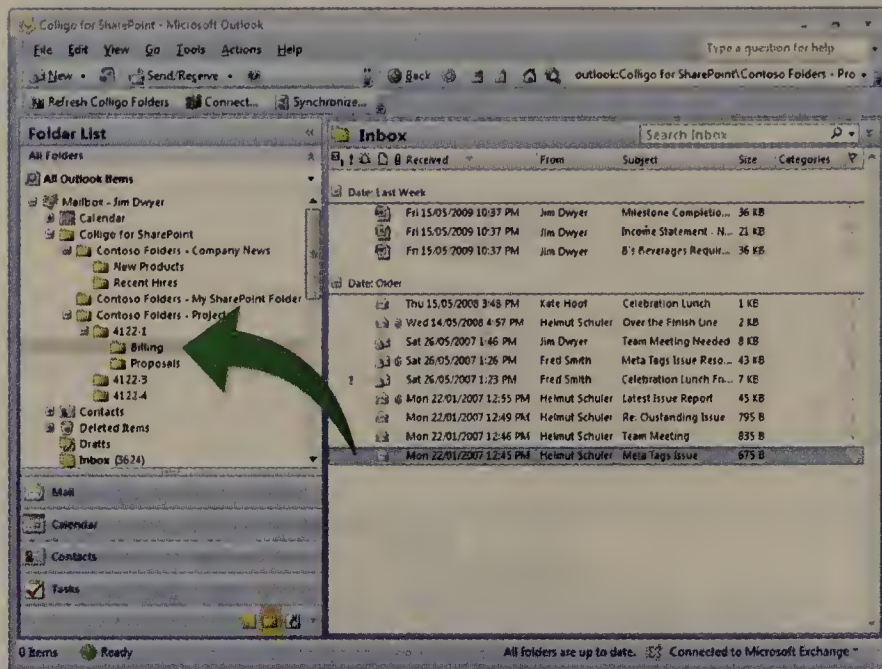
Quest Software (Administration)

Quest's Site Administrator for SharePoint is all about control once SharePoint begins to take hold across a company.

"The strength of Site Administrator is the ability to set policies," says Joel Oleson, senior product architect at Quest.

A popular feature is the ability to centrally block users from creating sites under SharePoint's My Sites. The features prevent levels of management from getting too deep and complex. Also, the Security Explorer controls provide insight into permissions and security related to SharePoint sites, and adds a unique cloning feature for permissions.

Core to the tool is a set of reporting capabilities through a Web-based information portal that lets administrators delegate rights for users to see specific reports. SharePoint's native controls restrict that sort of access to administrators.



Colligo offers tools that integrate with Outlook, Windows Explorer and SharePoint content.

In 2010, Quest will add to Site Administrator the ability to manage external lists, and a set of 50 wrappers for PowerShell cmdlets that give them a GUI interface.

Quest is also looking to online services to help SharePoint customers. On Dec. 16 it will release to select beta customers a Windows Azure-based service called Site Administrator Reports on Demand. The full beta opens in January and the free service goes live before the end of March.

RepliWeb (Life-cycle management)

RepliWeb's Operational Synchronization for SharePoint (ROSS) manages deployments to development, test and production SharePoint

environments. It also supports multi-farm replication for corporate SharePoint deployments.

RepliWeb concentrates its efforts around the development of SharePoint-based Web sites, portals and applications, which is where more corporate SharePoint deployments have their focus.

"This is well-known life-cycle management," says Ted Orme, director of European operations for RepliWeb. "The key is being able to keep these environments separate but also being able to move assets between them."

RepliWeb's focus is around environments with a large number of sites, collections and large amounts of content spread among development, test and production sites.

One of the most important features of ROSS is Roll Back, which lets users

return to their original configuration after making an update. Governance is another key that provides controls on who can do what on the system and who is allowed to update different sites or applications. The defining feature is delegation to users via a Web interface.

The other important feature is that users can take content and code that is in deployment and move it back into the development realm.

For 2010, Microsoft is pushing SharePoint as a development platform and Orme says that change suits RepliWeb. He says the company is very optimistic about the 2010 platform, but did not provide specific details on RepliWeb's future products. ■

■ Augmented reality, from page 12

virtual information that could be used to reduce climate change and its impact on the city.

The trend in education gives a sense of the potential for mobile AR. "As we move away from the desktop AR toys and start paying attention to where you are and what is around you, things get much more interesting," writes Robert Rice, author, entrepreneur and chairman of the AR Consortium. In this July 2009 blog post, Rice argues that the "mobile device becomes a lens that gives us the sensation of looking through and seeing the world around us layered with information, data and visualizations. As an industry, we are only beginning to explore the possibilities here...It is one thing to associate or link media to a general location, but it is much better to link to specific objects and things."

Mobile AR challenges

The key limitations are the accuracy of the consumer GPS fix and of the compass headings, and together, their relatively wide variance can baffle even the most promising AR software, as note earlier this year in a blog post by Jack Benoff, director of marketing strategy for Zugara, an interactive marketing and advertising agency

that's been tracking the potential, and the hype, of AR. The Zugara team experimented with the Layar AR browser on an HTC G1 phone on the T-Mobile network.

"Typically we experienced a GPS accuracy level of somewhere between 100 to 250 feet," Benoff wrote. "Now, remember, that could go 250 feet to the left, right, forward or backwards. . . So really, the device was telling us that the piece of data that was overlaid on the phone's screen was somewhere within a 31,400 square foot (if accuracy was 100 feet) to 196,250 square foot (if accuracy was 250 feet) area. That means you won't be able to swing your phone around an Internet café and match a tweet with a face. In fact, you can't even safely assume that the person whose tweets you're reading is even in the café with you..."

The GPS signal can also be flakey, as one former MIT student, Karen Schrier, discovered when she tested an AR education game she developed for her master's degree. Using the MIT AR toolkit, she modified one of the MIT games for GPS-enabled Microsoft PocketPC handheld, dubbing it "Reliving the Revolution," a mobile AR game that simulates the Battle of Lexington, which she tested out with some kids

on the actual battlefield in Lexington, Mass. Some GPS radios didn't work, or the signal was intermittent.

The current lack of location precision is one reason that metaio focused its junaio mobile AR platform initially on entertainment uses. The company uses what it calls picture tracking: "It recognizes the 3D image of a building and overlays the correct, relevant information," says junaio's Lisa Murphy.

"In the local search domain, we see AR as more of an embedded enrichment features," says GeoVector's Pamela Kerwin. "Based on the current state of sensors, data, battery life and processing capabilities within mobile devices, we believe augmented reality should be used to enhance the user experience once he has selected a place or object of interest."

Battery life may be a severe limiter, so mobile AR may be elective for some time to come: continuously running GPS, compass, Internet, and 3G or Wi-Fi connectivity can drain power in a very few hours.

Greater precision will let AR software open new interactions based on data from social networking sites, such as location-based Twitter feeds, and geotagged photos and video clips. ■



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RISKANDREWARD BY ANDREAS ANTONOPOULOS

Hot security predictions for 2010

LOOKING FORWARD TO 2010 while trying to erase the memory of 2009 — here are my security predictions for the new year.

- Security funding increases by more than 10% to recover from a year of cuts. Our research shows that security is one of the areas least likely to suffer severe funding cuts. However, given escalating threats, a flat security budget in 2009 may have been a step back for companies. Expect an attempt to make up for 2009.

- Congress creates new regulatory compliance mandates. Enron gave us the Sarbanes-Oxley Act (SOX). What will 100x Enron give us? The math of compliance is shocking because it represents “assymetric warfare”. A few sentences of legislation (SOX section 404?) can lead to billions of dollars in spending. The financial meltdown of 2008 to 2009 will lead to extensive and very costly regulation, in financial services and beyond.

- Self-propagating mobile phone worms and Trojans. Mobile security will get slightly worse as the proliferation of applications and smart devices broadens the attack surface. While we’ve seen worms on the iPhone, they have not been self-propagating, depending on PCs to spread. Expect to see true self-propagating threats on iPhone and Android systems in 2010.

- Cloud computing providers introduce encryption-at-rest and other security capabilities “as a service”. With security as one of the main impediments to cloud adoption, expect to see encryption, VPN, intrusion-protection systems and other security capabilities offered as a per-hour billable service. Amazon’s Virtual Private Cloud is just the beginning. This could become a key area of competition in 2010.

- Security in the cloud expands with new services. In addition to cloud computing, managed security services (security in the cloud) will also expand. Expect to see data-leak prevention, encryption, directory and authentication services provided by MSSP in addition to the old staples

of antispam, antimalware and firewall.

- Desktop virtualization grows. Beyond thin-client virtual desktops, companies will begin looking at on-laptop virtual machines as a way to create secure corporate desktops with easier deployment. A virtual machine can use snapshots to revert to a known-good (known-secure) configuration providing a higher degree of security for online banking or secure corporate applications. Work and play can co-exist on hardware while maintaining separation. Or you could just pretend your employees only use work PCs for work — good luck.

- The FBI issues tens of thousands of security letters to get records on individuals without warrants. Congress investigates and is appalled at the FBI’s “underreporting”. The FBI promises to do better (see 2009, and 2008 and 2007....). The 4th amendment continues to erode into meaninglessness.

- Real ID dies a deserved death and is abandoned in 2010. The brain dead idea of better-security-via-universal-ID unfortunately persists despite the enormous number of identity theft victims created by over-reliance on Social Security numbers.

- The Transportation Security Administration stops wasting billions of dollars in traveller delays by confiscating water bottles and removing shoes. Instead it focuses on real threats based on rational risk assessment, not security theater based on movie-plots (hat-tip Bruce Schneier). OK, unlikely, but I can dream, can’t I?

As always, I will revisit these at the end of the year and provide a critical analysis of my success rate. ■

Antonopoulos is a senior vice president and founding partner at Nemertes Research, an independent technology research firm. He can be reached at andreas@nemertes.com.

HP products target hybrid cloud computing

BY DENISE DUBIE

HP last week announced products it says will help enterprise IT and service providers ease the adoption of internal cloud computing setups as well as public cloud services.

HP, at its Software Universe 2009 show in Hamburg, Germany, is expected to introduce an updated version of its Operations Orchestration software, which can now extend the product’s automated provisioning and de-provisioning capabilities into Amazon Elastic Compute Cloud (EC2). The software, sold as a license and deployed on customer premises, enables IT administrators to automate the process of provisioning virtual resources. HP executives say the added features will let companies using both internal and external clouds standardize on provisioning and de-provisioning workflows.

“We already have customers using internal private clouds and taking advantage of the automation capabilities,” says Paul Muller, vice president of software products strategic marketing for HP Software & Solutions. “Now they can also seamlessly provision into the cloud.”

With such a capability, Operations Orchestration could help enterprises with mixed environments allocate resources in a consistent manner,

industry watchers say.

“This news is playing into the hybrid cloud, which is the most popular deployment model, according to our research. It shows more than 60% of organizations planning cloud intend to adopt it using a hybrid internal and external model,” says Andi Mann, vice president of research at Enterprise Management Associates. “HP brings together a lot of management capabilities and applies them to the virtual environment, and it connects many moving parts together, which is really HP’s strong point. Most management vendors aren’t ready for the hybrid cloud yet.”

Operations Orchestration is available now, and HP says the starting price is \$125,000.

Another extension of existing products from HP last week was Cloud Assure for Cost Control. This software-as-a-service application uses SiteScope technology HP acquired with Mercury Interactive in 2006. This service is designed to take on the challenge of monitoring application performance when the application doesn’t run in the customer environment. The service, typically run when an application is first deployed, upgraded or undergoing other significant changes, tests the cloud provider’s infrastructure to ensure the application is configured for optimal performance.

“HP Cloud Assure for Cost Control helps customers understand and predict how their application will behave in the cloud environment,” Muller explains.

The application starts at \$50,000.

HP also plans to discuss technology targeted at service providers and not slated to be available until later in the first quarter of 2010. HP Communications as a Service program, or HP CaaS, will let service providers offer small and midsize businesses cloud-based services on an outsourced basis. Among the services expected to be available are self-service interactive voice response and video surveillance from HP. Unified communications and IP contact center services will be made available from partners.

HP executives say the program aims to make cloud computing services more easily digestible for smaller companies by reducing complexity and costs and providing services on demand.

“It will enable a single integration of this aggregation platform into their environment, which will make adding new services as they go forward easier and less expensive,” says Tim Marsden, chief technologist of Communications and Media Solutions for HP Software & Solutions. “This will help SMBs speed their time to market and get into communications-focused services. ■



NETINSIDER BY SCOTT BRADNER

Story of the year: Newspapers and the Internet

AS THE YEAR winds down I've been trying to decide how to summarize it Internet-wise. But it seems to me that the continuing saga of the news business symbolizes yet another year of close-to-terminal, Internet-induced confusion for traditional businesses — or, maybe, panic.

The anti-Google rhetoric in parts of the news business has been growing in intensity over the last year or so, and most of it seems to be parts of the news business implicitly admitting that it does not have the faintest idea of how to deal with the Internet. This puts it in about the same position as other parts of the copyright business, including movies and music.

This is not a new phenomenon — it has been almost five years since the French news service Agence France Presse (AFP) sued Google for helping direct readers to their Web sites. There have been other lawsuits and lots of bold talk since.

Some newspapers say they want Google to pay them for listing headlines and small snippets of articles in Google News. The newspapers threaten to block Google from their sites if it refuses.

There has been a lot of talk, but not much action. It would be trivial for a newspaper site to tell Google to stay out, a simple robots.txt file will do that. But just maybe the newspaper sites understand, at least at some level, that Google actually helps them. Or maybe they understand that if just some newspapers ban Google then their readership will likely tank because no one will know what is on their site and they will not have enough actual subscribers to their services to make up for lost readership.

In Germany, the newspapers are asking for a law that would make the

kind of linking Google does illegal. I guess the logic is that if it's illegal all news sites will be forced to join in the Google blocking, whether they want to or not. Seems to me that such a law would be a great assist to German-language newspapers outside of Germany since they are the only ones that could be found.

The logic seems to be a throwback to the days when all news came via a physical paper. You subscribed to a paper and that was your news source. I doubt very much that this will be a successful ploy in an environment of tens of thousands of news sources and one in which at least as many politicians are undone by YouTube as by investigative journalism.

Reader loyalty to a particular publication is just not there anymore.

I am not one of those 'information wants to be free' folks. I do think that reporters need to be paid and that a YouTube-only news world would be chaos at best. At least for many decades the news business, on paper and on TV, as well as the broadcast entertainment business have been advertising supported. At this point, there does not seem to be a path other than advertising for the news business. But, if they get out of the mode of blaming Google for all their

woes, maybe someone else can see one.

Disclaimer: Harvard, as far as I know, does not teach students to obsess on blaming someone at the expense of figuring a path forward, but I did not ask for a university opinion on Google phobia. The above view is my own. ■

Bradner is Harvard University's technology security officer. He can be reached at sob@sobco.com.

“There does not seem to be a path other than advertising for the news business. But, if they get out of the mode of blaming Google for all their woes, maybe someone else can see one.”



EYE ON THE CARRIERS BY JOHNA TILL JOHNSON

Cloud computing: The telcos' game to lose

YOU'RE PROBABLY SICK of hearing about cloud computing. I can't say I blame you. The buzz seems to be nearly deafening these days.

And the most annoying part is that for those of us old enough to remember, it's "back to the future" all over again.

True old-timers can recall the days when "cloud computing" meant a mainframe and associated terminals. And younger veterans of the dot-com years still remember application service providers. I won't say which I am — but I have to agree that the current incarnation looks eerily familiar.

However, things really are different these days. Here's why: Cloud computing offers an unprecedented ability for users to specify exactly what they want, in two ways.

First, they can define exactly what they want to buy. Software-as-a-service offers network-based delivery of a specific application (Salesforce.com being one of the best-known examples) with the underlying software and hardware hidden from the user. Platform-as-a-service delivers a "compute platform," typically an operating system plus a range of software tools. And infrastructure-as-a-service delivers storage and compute cycles on demand.

Second, users can control exactly how much they want to consume, and when. Providers typically offer services (whether software, platform or infrastructure) based on a virtualized architecture, which lets users auto-provision and quickly scale up (or down) to address demand spikes.

For these reasons, cloud computing is more than just hype. In fact, although fewer than 2% of my clients say they're using it this year, nearly 20% say they're looking into cloud-based services.

So where do telcos come in? Basically, they're beautifully positioned to capitalize on the drive towards cloud computing — particularly infrastructure-as-a-service — if they don't screw it up.


Why? A couple of reasons. First is that delivering anything across the 'Net consumes bandwidth — quite a lot in the case of platform- and infrastructure-as-a-service. It makes logical sense for the folks who provide infrastructure and platform services to supply the bandwidth that goes with it — otherwise, there's the risk of under or over-provisioning.

Second is the fact that telcos are, above all else, service providers. That means their core businesses involve significant investments in customer service — unlike, say, Google, whose core business is selling eyeballs to advertisers. Although Google also offers a host of innovative applications and services to users, the users aren't customers (in the sense that they pay for, and expect to receive, a certain quality of service).

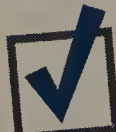
Finally, there's the fact that effectively delivering infrastructure is a different challenge than, say, delivering applications. Telcos have decades of experience in delivering infrastructure. They're not the only ones — companies such as IBM, for instance, can say the same. But they've certainly got the experience.

All that said, the telcos also have a track record of making unbelievably boneheaded moves, so there's no guarantee they'll pull this one off. As I said up front — it's their game to lose. ■

Johnson is president and senior founding partner at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

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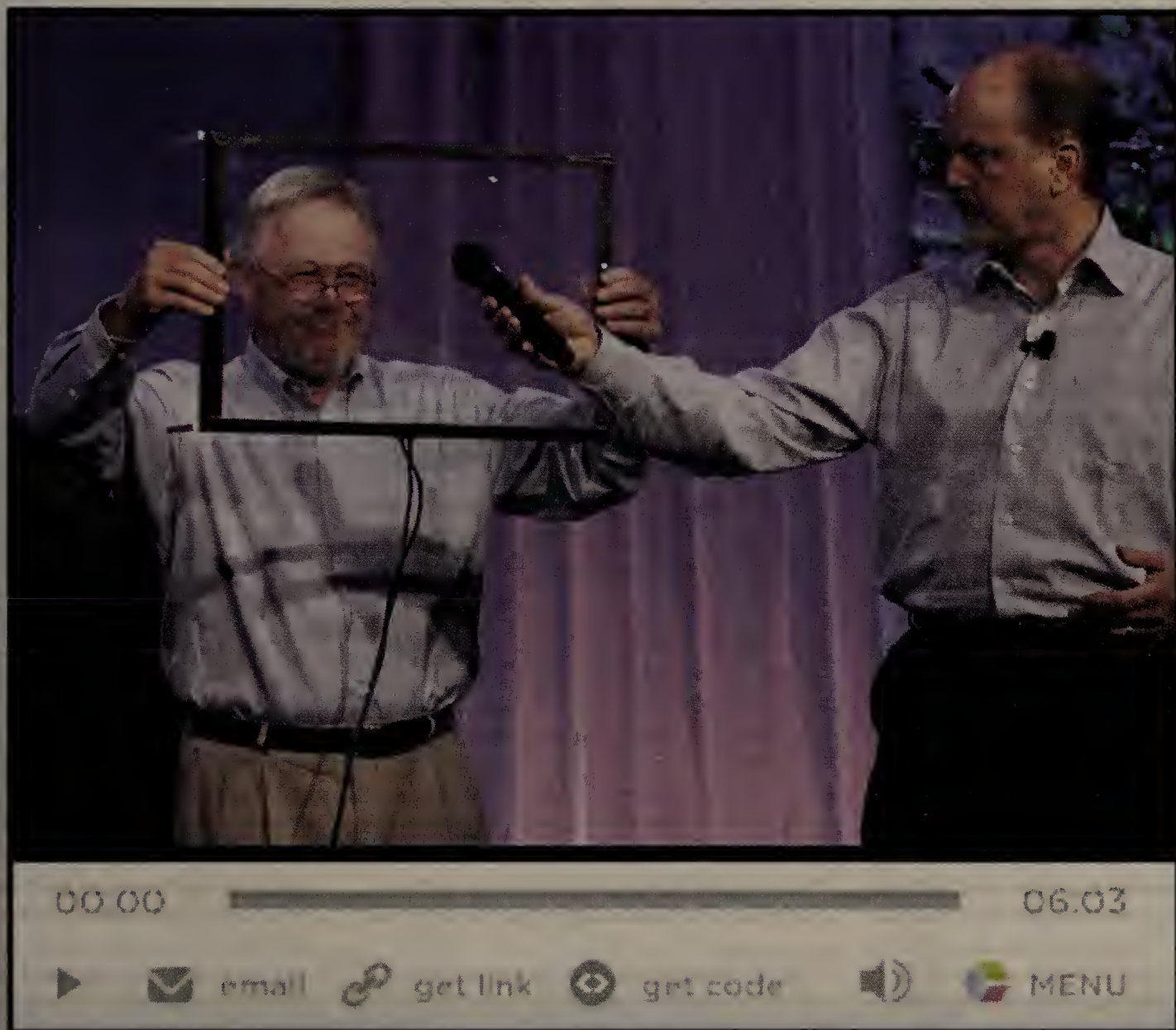
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■ **Microsoft**, from page 1

new applications coming in" to the cloud, said Amitabh Srivastava, senior vice president of Microsoft's new Server and Cloud division, referring to the work he has overseen on the Azure cloud platform. Srivastava, who spoke at Microsoft's November Professional Developers Conference (PDC). "The shift you are seeing now is to go after legacy apps, we have to move those to the cloud."

It is there, experts say, where the work will get tough.

"We are talking about a large shift across the product line," says Frank Gillett, vice president and principal analyst with Forrester Research. A year ago, Microsoft said all its enterprise software would eventually be offered as a service. "So 2010 is just simply a building year to begin to get that integration among the products of software plus services. That is a lot of work."

Evidence of such work came Dec. 8, when Microsoft announced it was creating a Server and Cloud division by integrating its Windows Azure group into its Server and Tools business unit, an alignment that speaks not only to integrating the infrastructure and development tools, but a harbinger to integration that will come across Microsoft's software portfolio.

The new division aligns technologies introduced in November at the company's annual PDC, where Microsoft showed its goal is to supply tools, middleware and services so users can run applications that span corporate and cloud networks, especially those built on top of the Azure cloud operating system.

That PDC lineup was dominated by new technologies such as Sydney (virtual networks), AppFabric (an application server layer), Next Generation Active Directory, System Center "Cloud" management tools, and updates to the .Net Framework, all of which provide bridges between corporate networks and cloud services.

But as validation to the building effort Microsoft faces, only a small portion of that software is available now. The majority will launch initial beta cycles in 2010. And Gillett adds that Azure and Microsoft's Business Productivity Online Services (BPOS), which includes Exchange and SharePoint, are in their first versions and will take several years to mature.

"The challenge for Microsoft is how they talk about their online services without using the cloud word because the cloud word will get people just thinking about Azure," Gillett says. "They want people to think about the full spectrum of things Microsoft can do for people as a service. Their danger right now is that Azure equals cloud."

Educating those users is precisely the other hurdle Microsoft will have to start negotiating in 2010, according to Andi Mann, vice president at Enterprise Management Associates (EMA).

"I think for Microsoft in 2010 the cloud is going to be more important from a marketing and positioning perspective than an actual use case," says Mann, who will publish the report

Bridging technologies

Microsoft is concentrating development on building bridges between on-premises corporate networks and its Windows Azure cloud platform and its cloud-based services. Here is a look at some of that work that will ramp up in 2010.

Software or services	Description	Delivery
Project Sydney	Introduced as a concept at PDC. Creates virtual network that securely connects pieces of an application running in various places so they all look like one logical system.	Late 2010
AppFabric	An app server layer, which includes hosting and caching technologies, that spans the cloud and internal servers. Provides single, consistent environment for .Net applications.	Win Server 2008 now; Azure betas in 2010
Next Generation Active Directory	Built on a database and provides ability to deploy numerous instances to provide claims-based access controls that exclusively support applications or services based in the cloud or on-premises.	Early days, delivery could come in 2012
System Center "Cloud"	Details are fuzzy, but Microsoft plans for single management system with one console that spans IT and the cloud.	Beta slated for early next year
.Net Framework	Added Windows Identity Foundation (WIF), formerly called the Geneva Framework, which helps developers build applications that incorporate a claims-based identity model for authentication/authorization in the enterprise or the cloud.	Available
Virtual Machine Roles	A feature of Visual Studio 2010 for packaging legacy apps into VM for deployment on the cloud.	March 2010

"The Responsible Cloud" that looks at drivers, adoption patterns, management, security and other areas.

Mann says the report shows that across all enterprises, adoption of cloud computing is 11%. "That is really quite small," he says.

His data shows only 16% of those who have adopted cloud computing, or will within 12 months, will go solely with an off-premises model. But 50% will go with a mixture on both on-premises and off-premises.

Mann says the cloud computing model that is least popular with users is platform-as-a-cloud that Azure represents. The most popular is software-as-a-service, represented for Microsoft by BPOS, and infrastructure as a service, represented by SQL Azure and integration technology.

It is that last area that will represent much of Microsoft's building in 2010.

Project Sydney, which was introduced as a concept at PDC, creates a sort of virtual network that ties together pieces of an application or processes running in various places so they look like one logical system. AppFabric is an application server layer, which includes hosting and caching technologies, that spans the cloud and internal servers so developers have a single,

consistent environment for .Net applications. Visual Studio 2010 will include templates that allow movement of cloud applications between hosted and internal networks. System Center "Cloud" management tools that go into beta in 2010 are expected to provide a unified console for managing on-premises and cloud assets in the same way.

"Lots of applications will be split between cloud and IT or multiple places and we want to have bridging technologies and we are going to provide these services or tools or various ways to help you partition your app in any way you want," Microsoft's Srivastava said. He cited Sydney as an example along with AppFabric and its access control and service bus features.

The building, however, won't all be original work. On Dec. 11, Microsoft bought Opalis, which develops IT automation technology, and will use it to extend its System Center tools across corporate networks and the cloud.

The list represents only a handful of what is likely needed to connect internal IT systems with the cloud and do it in a secure and managed way to support mission-critical applications.

"The full dimensions of the problems will develop over time as organizations step into the cloud," says Ray Valdes, a Gartner analyst. ■

Benchmarking SAN performance

Five best practices that will help you minimize SAN problems

BY CRAIG FOSTER

Storage-area network complexity can mask what might seem to be relatively benign issues that have the potential to build up and cause an outage or brown-out. To identify trouble early, you need to create a SAN performance benchmark, an essential first step to setting up metrics to gauge infrastructure performance.

The key is to establish the metrics in advance. Most companies wait until they have a problem before trying to truly understand baseline performance. Ironically that is the worst time to look because: a) what is found is often overwhelming, b) often multiple issues appear to be the cause and it can be difficult to know where to start, and c) many performance optimization opportunities are overlooked.

Here are best practices for benchmarking SAN performance:

1. Baseline when the SAN is healthy. The best time to evaluate an environment is when everything is healthy and before a cost-saving or performance-enhancing project is implemented. This provides a metric to compare the "problem" state to the baseline, making it immediately obvious where the problem resides.

Ideally, a company should be proactive with the initial baseline and address the issues. Eliminating issues helps reduce the number of problems that can together cause a brownout. Optimization savings can be well planned and measured by comparing both consolidation effectiveness and user impact

A good baseline will often reveal over-provisioned infrastructures, ineffective use of tiers, multi-path issues, uneven load distribution, physical layer problems, minor device incompatibilities, improper configurations (zoning, I/O size request, queue depths), out of control applications, unnecessary load or intermittent performance issues.

2. Measure what matters. The most important goal for an application user is to see their actions complete successfully and accurately in a timely fashion. There are two secondary goals for IT organization: how to resolve user issues and how to ensure the solutions use only the resources necessary.

Companies often rely on the most readily

available metrics rather than the most useful. One such metric is I/Os per second. This metric only addresses two secondary measures: is the I/O causing a problem, and how optimal is it? It does not get to the heart of the most important questions: how quickly are things getting done, and are they all successful?

“Another mistake is relying on the end devices or components to tell you if the infrastructure is healthy. Storage arrays and switches provide useful information when problems arise, but they aren’t designed to determine if a problem exists in the infrastructure as a whole.”

Rather than looking at I/O, for effective monitoring you need to consider:

- Minimum, maximum and average for Read/Write/Other Exchange Completion time (ECT) for every host bus adaptor (HBA), storage port and logical unit number (LUN).
- Minimum, maximum and average read command to first data for every HBA, storage port and LUN.
- Minimum, maximum and average pending exchanges (queue depth) for every HBA, storage port and LUN.
- Read/write/other I/O size for every HBA, storage port and LUN.

Another common mistake is to give a metric more credit than it deserves. For example, relying on a server response time (either from the operating system or an application on the server) to determine the health of the rest of the infrastructure.

There are several problems with this approach that make it insufficient to determine whether the infrastructure is causing issues. One challenge is that the measurement is impacted by all of the resources on the server. Server issues can cause this measurement to appear artificially long when in fact something as simple as a busy CPU can be the real problem, not I/O transaction times.

The other issue is it relies on the same resources that are being monitored to do the monitoring. Therefore, either large averages or samples are all that are gathered. Ironically, when things are slow fewer transactions are completed. If that applies to only one resource

for the server (for example a single LUN or virtual machine), the response times can still look good even though there is a big problem. When you average tens of thousands of good transactions with tens of thousands of bad... the result is everything looks good. Outlying infrastructure problems can be missed.

3. Measure the complete I/O transaction path. Because application response time is measured on the server by the server, it is only a rough indicator in a benchmark. Administrators should look to latency deltas throughout the data path to establish baselines for effective troubleshooting.

Another mistake is relying on the end devices or components to tell you if the infrastructure is healthy. Storage arrays and switches provide useful information when problems are present, but they aren't designed to determine if a problem is in the infrastructure as a whole. They are inward focused rather than infrastructure focused and lack the granularity to be conclusive. They simply cannot prove conclusively that all of the transactions are completing successfully from host to array and back again in a timely fashion.

4. Use non-intrusive instrumentation. Use instrumentation that is vendor-independent and not SAN component-derived. It will help provide accurate, comprehensive, cross-vendor benchmark metrics. The ideal way to baseline an infrastructure is to find a solution that monitors the environment without the performance impact that a component might have or the outside influences that a server has.

5. Measure every transaction, in real time. The solution needs to be able to monitor every transaction to ensure that they complete successfully in a timely fashion and present the data frequently enough (ideally every second) to ensure that outliers are not missed. The typical one- or five-minute averages most tools report are guaranteed to miss problems.

Establishing metrics in advance based on data captured when the SAN is healthy and application response times are acceptable is key to identifying SAN troubles early. These benchmarks will enable you to spot what otherwise might seem like benign issues and prevent outages. ■

Foster is a principal architect for Virtual Instruments professional services.

This vendor-written tech primer has been edited by Network World to eliminate product promotion, but readers should note it will likely favor the submitter's approach.

Network World has been redesigned and, beginning with the issue of Jan. 18, we will be replacing Tech Update with a feature called Tech Debate, experts arguing about the hottest topics. Stay tuned.



GEARHEAD BY MARK GIBBS

What's under the Gearhead Christmas tree

HERE WE ARE just a few days away from Christmas so let's see what's under the Gearhead Christmas tree. Ah, here's a really geeky present... A few weeks ago I discussed the problem of trying to create an Excel spreadsheet that could randomly order a list of numbers without using macros. Reader Peter Butler came up with a solution after which reader Dan Stieneke came up with a really simple solution.

Here's the method: Say we need to sort 75 numbers. In each cell from A1 to A75 we put the formula =RAND() to create a unique pseudo-random number and in each cell from B1 to B75 we put the formula =COUNTIF(\$A\$1:\$A\$75,"<="&[current]) where [current] would be a reference to the cell containing the random number immediately to the left.

The formula calculates how many cells in the range of random numbers are less than or equal to the current cell. Thus, the lowest-valued random number will have one cell equal or smaller, the second lowest will have two lower-or-equal values, and so on. Voila! Stieneke gets a Gearhead Extreme Cleverness award.

So, what else might be under the tree? The Jabra Halo, a lightweight, portable and versatile Bluetooth stereo headphone set with built-in microphones. When paired with a device that supports the A2DP Bluetooth profile, such as an iPhone or Droid, you have great media playback and, when you receive or place a call, the music will be automatically suspended. I tried the headphones with the Pandora application on the Droid and wow! Heavenly! Great mobile music!

The headset folds using a cool "snap" hinge mechanism on either side so it takes minimal storage space, and when locked in place the electronics fire up and you'll be connected to whatever device is in range that you've paired with. If you prefer to use the headphones in wired mode, the provided

micro USB-jack-to-mini-jack cable disables the Bluetooth subsystem.

The sound quality is excellent: Good high and middle frequencies with a rich bass. I love these! And given the quality and feature of the Halo headset, not a bad price at \$129.99. I'll award the Jabra Halo headset 5 out of 5.

The final present under the Gearhead tree is a cool way to get the Linux configuration you want — as long as it's SUSE-based — with the least amount of effort: SUSE Studio.

SUSE Studio helps you create a custom SUSE configuration formatted for a live CD or DVD, a VMware image, a hard disk or USB image, or a virtual machine to run under Xen.

You chose a template based on openSUSE 11.1 or 11.2, or SUSE Linux Enterprise 10 or 11. Under these choices you can select from a number of variants; all templates include a text-only server version and all but SUSE Linux Enterprise 10 offer a minimalistic "Just enough OS (JeOS)" version. Other choices, depending on the operating system version, include minimal X, Gnome desktop, or KDE 3 or 4 desktops.

Next you select 32- or 64-bit architecture, name your appliance, and select which applications are to be included along with configuration details such as locale; network setup; predefined users and groups; personalization; default run level and user license agreement; MySQL configuration; desktop logon and program autostarts; storage and memory; and scripts to be run at the end of the build or whenever the appliance boots. You can also optionally add file into the target configuration.

Finally, you select the configuration format, assign a version number and click on Build ... bam! You've got yourself a ready to run SUSE Linux system. Let's see Santa beat that ■

Gibbs is festive in Ventura, Calif. Come a-caroling at gearhead@gibbs.com.



COOLTOOLS BY KEITH SHAW

Will the litl make it big?

THE SCOOP: LITL Internet computer, by litl.com, about \$700.

What it is: With recent news

about the Internet-connected CrunchPad (now called Joo-Joo), I thought it was interesting that the litl has already been shipping. Basically the same concept (except this is a notebook rather than a tablet with a touchscreen), the litl is meant to be an Internet computer (or "Webbook"), accessing its applications across the Internet. There's no hard drive for installing applications (there is some small memory for content caching), no optical drive and it runs on a Linux operating system instead of Windows or Macintosh. The user interface is a bunch of "note cards" that let users access browser-based Web applications (such as Gmail, YouTube, flick), as well as specifically built Web applications such as an alarm clock or a weather app (there's even a Facebook application that lets you view friends' updates). The design also eliminates many extraneous keys found on notebooks, such as function keys, a number pad (there's no "num lock" key), allowing for larger keys and making it look easier to use (some may say simplistic). Like a tablet, you can bend the screen backwards to create a digital photo frame-like device, enhancing some of the Web applications (like the clock and weather modules).

Why it's cool: The litl is meant to complement an existing home network — it's not meant to replace your notebook. Rather, it's meant to be an "always on" device that can be used to quickly access Internet nuggets, and placed conveniently in a kitchen, family room (on a shelf) or other non-traditional locations. Because many of us only use computers for things such as e-mail, photo sharing, social networking and other Internet-based activities, the litl can be utilized instead of having to boot up a notebook.



The litl needs a lower cost before this concept takes off.

existing network, it's still a tough sell, especially for people who have lots of experience with notebooks.

Bottom line: I like the concept of an Internet-only computer (or Webbook), as it's clear that many people want a notebook that can do things without needing extra stuff. But the price needs to be lower, and the tasks on the device need to equal, if not exceed, the experience you can get from existing systems. It's not totally there yet.

Grade: ★★★ (out of five).

Last-minute 5-star items: The Shure X2u XLR-to-USB signal adapter (\$150) is a great way to add a professional microphone to your computer if you're doing lots of sound recording (such as a podcaster like me). Epson's iPrint iPhone app (free!) takes iPhone photos and prints them directly across your home network to any network-connected Epson printer.

Shaw can be reached at kshaw@nww.com.

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VMware View, Citrix XenDesktop win VDI software shootout

Nine products offer cost-saving alternatives to traditional desktops

BY TOM HENDERSON AND BRENDAN ALLEN

Virtual desktop infrastructure is a hot topic for a number of reasons. Companies familiar with server virtualization are looking to extend to the desktop. Microsoft is delivering client virtualization capabilities in Windows 7.

And VDI promises a way to control desktop costs, improve security and management — even deliver enterprise apps to phones and other mobile devices.

With VDI, users call up a terminal-like session on a remote host machine. Client sessions can run on Mac or Linux operating systems, but typically they run Windows. On the server side, the host runs Windows Server, often a full instance of a virtual machine.

We tested six software-based products that are designed to provision,

authenticate and manage VDI sessions. We also tested three hardware-based virtual desktops. We looked at the client-side experience and the server-side maintenance and administrative qualities of each product.

In the past, terminal services sessions were plagued by choppy screen refreshes and slow response times, partly due to the use of Microsoft's Remote Desktop Protocol (RDP). Many vendors have replaced RDP or have augmented products with faster protocols and we found the current crop of VDI products to be vastly more flexible and speedier than prior platforms — although still somewhat daunting to maintain.

The race for the top score was exceedingly close. Citrix XenDesktop 4 and VMware View 3 tied for first, until VMware released View 4 midway through our test cycle. View 4's blazing fast transport protocol called PCoIP gave it a slight edge over XenDesktop.

The final results look this way: VMware's View 4 is our Clear Choice

NETRESULTS

Software-based

Product	XenDesktop 4	VMware View 3/4	OnDemand	vWorkspace
Vendor	Citrix www.citrix.com	VMware www.vmware.com	Synchron www.synchron.com	Quest www.quest.com
Price	Enterprise Edition: \$225; Platinum Edition, \$350 per user or device	View Enterprise, \$150; View Premium \$250 per concurrent user	\$1,000 per server core	vWorkspace Enterprise, \$169 per concurrent user
Pros	Responsive; flexible; broad support for client devices.	Excellent performance; provisioning methods, Web- based administration.	Broad client support; uses "cluster" concept to divide coverage.	Almost hypervisor agnostic; strong security.
Cons	Too many deployment options, difficult to reconfigure.	Occasional provisioning errors, only vSphere/ESX backend supported, PCoIP not supported on Macs.	Weak documentation; begs for comprehensive installer app.	Slightly difficult client configuration; needs third- party tools for rapid provisioning.
Score	4	4, 4.125	3.875	3.75

SCORECARD

Software-based

Product		XenDesktop 4	VMware View 4	VMware View 3	Synchron OnDemand
Action	Weight				
Installation provisioning	25%	4	4	4	3.5
Management administration	25%	4	4	4	4
Client access and features	25%	4	4.5	4	4
Security and performance	25%	4	4	4	4
Total score		4	4.125	4	3.875

SCORING KEY: 5: EXCEPTIONAL; 4: VERY GOOD; 3: AVERAGE; 2: BELOW AVERAGE; 1: SUBPAR OR NOT AVAILABLE

test winner with a score of 4.125; Citrix XenDesktop and View 3 both score a 4.0. On the hardware side, PanoLogic wins with a score of 4.5, besting NComputing and Wyse.

We found that there are three levels of VDI sessions, so potential VDI customers need to determine how these capabilities match up with your remote desktop needs. A basic session would be a simple remote logon to a Windows virtual machine or shared instance from a Windows client or hardware device. In the next level, a remote session could share local resources, such as USB, disk or even antivirus inputs. The ultimate VDI experience was being able to watch fully synchronized remote redisplay of YouTube videos or Hulu video Web sessions. Few of the vendors could deliver that level of performance.

Overall, we found that each of the nine products worked well, with varying degrees of kinks that needed straightening out. Here are the product summaries:

Software-based VDI

Citrix XenDesktop 4: Flexible and fast

Citrix's XenDesktop 4 was the most accommodating VDI platform tested, likely owing to its origins as a hybrid of Linux and Citrix. While it's not a lightweight platform, we found it to be the most flexible. Microsoft recommends XenDesktop for its own Microsoft Standard VDI and Premium VDI suite client-side components (see How Microsoft Does VDI, page 26). XenDesktop runs on Microsoft Hyper-V, VMware's ESX/vSphere platforms, as well as XenServer.

XenDesktop requires two Windows-based server VMs on the administrative side. These VMs cover provisioning and administration of desktop deliveries as a connection broker.

On the client side, XenDesktop supports most Windows clients, MacOS, Linux, plus various cell phones and hardware terminals.

The initial 'tax' in terms of hosted hardware is high. Citrix recommends using two physical servers at minimum, one to host the VMs of the server, and the other to house the desktops, which are standard VMs. That said, we used the two servers for most of the other tests, too.

Making XenDesktop work is simple if you read and follow the supplied guidelines studiously. XenDesktop requires Microsoft's Active Directory with DHCP and DNS/DDNS services running. XenDesktop host services use the Microsoft .Net Framework SP1 and Microsoft SQL Server 2005.

Although the large number of provisioning options initially shocked us, we found that provisioning revolves around creating generic XP versions, then using these versions as the basis for subsequent groups.

With XenDesktop we could create two kinds of desktops: pooled desktops, which are non-persistent and are returned to the pool or simply reused for subsequent use and assigned where the first user to connect to that desktop 'sticks' to it, or where a user is specifically assigned to a VM. XenDesktop automatically creates pooled desktops via the XenDesktop Setup Wizard. Assigned desktops are created manually.

The XenDesktop Delivery Services Console unfortunately doesn't use templates to create hosted VMs for use by external clients. Therein lies the drudgery, as unless VMs are the pooled variety, they have to be built and

Hardware-based				
WebConnect 5.6.1.2048	MokaFive 2.4.1	Pano Logic 2.8	NComputing X550	V10L VX0 w/ WTOS 6.4
Ericom www.ericom.com	MokaFive www.mokiafive.com	Pano Logic www.panologic.com	NComputing www.ncomputing.com	Wyse www.wyse.com
\$120-\$230 per concurrent user; \$60-\$130 per named user.	\$79-\$99 per user/ per year	\$1,899 for five PanoCubes, seat licenses	\$449 for five-device kit	\$329 per thin client
Nearly hypervisor agnostic; supports Linux desktops; setup is relatively easy.	Offline desktop, Mac client support, works with/without Active Directory.	Simple Web administration and provisioning; Pano Cubes easy to set up/connect to; works with/without AD.	Simple installation/ configuration plug and play devices.	Built-in PPTP VPN capabilities; can link to many VDI solutions.
Buggy; feedback rare when errors occur.	Must download entire VM before use; confusing administration Web tool.	PanoRemote USB keys add little value.	No USB ports for device; needs PCI slots.	Uses insecure FTP to get config files; difficult to configure wnos.ini file, weak documentation.
3.5	3.375	4.5	3.75	3.375

Hardware-based					
Quest vWorkspace	Ericom WebConnect	MokaFive	PanoLogic	Ncomputing X-Series	Wyse V10L
3.5	3.0	3	4.5	4	3
4	3.5	3.5	4.5	4	3
3.5	4	3	4.5	3	4
4	3.5	4	4.5	4	3.5
3.75	3.5	3.375	4.5	3.75	3.375

■ jump_bent black 7.5, from page 99

assigned one at a time. If you need thousands, prepare for a wait.

Reconfigurations are difficult, because there aren't options in the XenDesktop Setup Wizard to change a desktop pool once created. Pools of VMs can also be built through the Delivery Services console, but must already exist (or be created manually), then assigned to the pool.

VMs in pooled environments use a PxE boot (remote program load) when they start from one of the Desktop Delivery server VMs. VMs that are assigned use storage allocated when they're created.

Clients log on through a browser that's pointed to the Desktop Provisioning server's Web site. Users supply credentials, whose security is a function of Active Directory via the Citrix Online plug-in. When we tested responsiveness, XenDesktop, with Citrix's ICA protocol, was consistently fast with both Windows and Mac clients. VMware View 4, with its PCoIP protocol, was unbeatable in our tests with Windows clients, but VMware uses the older RDP protocol on Mac clients and is significantly slower.

VMware View 3/4: Superior speed, management features

We began testing with VMware View Version 3, but upgraded to Version 4 during the testing cycle. The big difference between the two is that View 4 adds a transport protocol — PCoIP — that speeds communications between hosted VMs and clients.

Like XenDesktop, View connects to an Active Directory, and optionally one can install View Composer. View requires ESX 3.5 with VMware's vCenter on a VM or another machine. An additional VM is required to host View Connection Server and View Composer needs to be installed on the vCenter machine.

View Connection Server is the central console and administrative service for View, and links to the world via a Web browser connection. View Connection Server is the broker between clients and hosted VMs, which must live only on VMware ESX- or vSphere-hosted VMs — or other hosts

so long as a compatible VMware View agent is installed on it.

Both versions of View were the most talented at creating and managing VMs. In View, there are three types of desktop provisioning methods: individual, automated desktop (in either persistent or non-persistent varieties), and a manual desktop pool (either persistent or non-persistent.) View can broker a Microsoft Terminal Services pool of available VMs.

Automated provisioning is set by an administrator through a Web-based interface credentialed through Active Directory. The optional tool, View Composer, which needs VMware vCenter, can provision linked clones, VMs that share a common parent VM, from a snapshot that becomes the base of subsequent provisioned images.

When you want to update the linked clone VM, another snapshot must be created so that subsequent VMs get the changes. In persistent VMs, snapshots take up storage space. It's also possible to make persistent VMs without using linked clones and therefore without snapshots. There are lots of different combos available in View 3/4.

The client experience of VMware View was good on View 3, but becomes comparatively awesome on View 4, when using persistent or non-persistent VM access. Like XenDesktop, one accesses a Web page, presents Active Directory credentials, then gets a downloaded application that in VMware's case, runs from a Java-launched client application to link to its desired VM. The PCoIP transport in View 4 makes YouTube usable even through two hypervisors.

View wasn't without its glitches, however. During initial provisioning or after snapshots, the VMware View Agent application wouldn't initialize, forcing us to reboot the specific non-connecting VMs administratively.

Like XenDesktop, VMware View can be used for access by other devices, like the Wyse and Pano Logic units we tested.

Despite occasional buggy behavior, the administrative ease of VMware View was strong, even if it's captive to VMware's comparatively expensive VM hosting platform. VMware customers looking for VDI and a compelling reason to upgrade to vSphere 4 will find the client-side speed of View 4 to be a good one.

How Microsoft does VDI

Microsoft does not offer a specific, purpose-built VDI tool comparable to XenDesktop or VMware View, so we did not include Microsoft in our test. In fact, based on Microsoft's longstanding relationship with Citrix, Microsoft suggests using XenDesktop for VDI — especially for Windows 7 hosting.

However, you could piece together a VDI solution using a mix of general-purpose Microsoft tools.

For example, if your organization has Windows Server 2008 R2 with the Hyper-V2 virtualization platform, you're in luck. Microsoft's Systems Center-Virtual Machine Manager (SC-VMM) becomes the orchestration system behind VDI.

Microsoft provides two flavors of VDI, a Standard and Premium Suite. Running Windows 7 as a hosted VDI-controlled virtual machine requires a Remote Data Services CAL along with Microsoft's Desktop Optimization Pack (MDOP). These two pieces are controlled with SC-VMM and SCCM — the Systems Center Configuration Manager (standard license).

Monitoring and performance management are added by the final component, the System Center Operations Manager. The SCCM doesn't handle dual virtualization schemes, as in VDI and server virtualization — but the premium license does.

Also added in the Premium Suite is App-V for RDS, an enhanced flavor of App-V that allows hosted sessions to use App-V so that the applications can be 'sandboxed' and, if group policy controls are effectively implemented, the application is one more step removed in terms of protection from muddling, data copying, and hosted session malware and potentially, subterfuge. The premium suite also permits non-persistent sessions, as well as persistent or 'owned' VM VDI sessions. — Tom Henderson

Synchron OnDemand: Simple to use, some rough edges

With OnDemand, users access VM sessions via Web page authentication. Session links from client to VM are accomplished via Java (JRE 1.6). The host session can be Windows XP, Vista or Windows 2003 Server.

Synchron's OnDemand software runs VDI sessions on either Microsoft's Hyper-V (tested) or VMware ESX 3.5. OnDemand software components for Hyper-V use Microsoft's Internet Information Services (IIS) as a portal to link clients in VMs running atop Hyper-V. Initial configuration took a while, because the PDF documentation was incomplete, including one section with a 'TBA', which we guess to mean 'to be added'.

Four packages were added to Hyper-V/Windows 2008R2 server. We then set about creating the 'substrate' policy, IIS and Hyper-V settings. After a bit of work, we were able to create Habitats, which serve as VM access aggregations that the OnDemand Portal software uses to assign users to machines via Synchron Policy Agents. The Portal also load balances user VM requests across multiple Synchron OnDemand Controllers.

The OnDemand Enterprise Manager is the management application, and we found that creating 'gold' images was similar to the parent/child relationships in VMware View and XenDesktop.

OnDemand client access was fast to authenticate and logon from a browser, whose credentials follow the configuration set via Policy Agent and Active Directory settings. The YouTube test we used to track multimedia didn't work as well as we'd have liked, and when Synchron supplies updates to become compatible with VMware View 4/vSphere, we believe it may vastly speed up multimedia client response.

Overall, Synchron OnDemand is a more difficult installation that gave us the feel of a work in progress, but one with promise. Clients will enjoy its simplicity of access, and between clever load balancing and astute Active Directory controls (on the Hyper-V side we tested), it should be soon ready to recommend.

See **VDI**, page 28



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■ **VDI**, from page 26

Ericom WebConnect: Lots of promise, still needs work

Ericom's 'secret sauce' is a transportation protocol called Blaze, which is an adaptation of RDP for terminal services.

Blaze is designed to improve speed for multimedia, like VMware View 4's PCoIP protocol. We received Ericom's WebConnect 6.2.2.0 and continued testing from beta software Ericom had sent. (The code we were sent was labeled as final, but we detected that we received a special build of Ericom's server software, so we can't reliably state at press time that our results are what you'll see.) Ericom insists this code is what you'll receive until the next release, and covers bugs we found in initial testing.

WebConnect can use many hosted VM platforms, ranging from ESX/vSphere, Hyper-V, XenServer, to Parallels Virtuozzo and Oracle VM. We initially tested its software with VMware's ESX 3.51, but had ongoing difficulties with that release. We then tested with VMware vSphere. Ericom claims wide directory services compatibility (we tested on Active Directory) with eDirectory, OpenLDAP, Sun's LDAP or IBM Tivoli.

The server software we tested was installed on Windows 2003 Server in a VM on vSphere. The Ericom Server software (which lives in a VM on Windows 2000/2003/2008 Server editions) can set up two kinds of VM pools for client use, static (each user is manually assigned a specific VM) or dynamic VMs that can be either persistent or non-persistent instances. Once persistent, a user 'owns' the VM indefinitely as though it were a static use. This allows provisioning of static pools that's easier than VMware View or XenDesktop's method.

Our attempt at creating non-persistent linked VMs was painful, as the process of making new VMs crashed consistently, without generating an error message. Ericom's VM naming scheme limits the administrator's ability to name VMs to 10 characters (as it adds five characters as a suffix to each name). If one doesn't know this, the extended account name is too long, won't log on and causes problems. The problem goes away if we create desktops manually, but then the ease goes away, too — and it wasn't fixed in the updated build we received. We later found that if the template VM was on a local hard drive, rather than the storage-area network, that the process worked; perhaps this is another bug.

VMs are required to have Ericom's tools installed on them, otherwise the VM can't be cloned for multiple images. Pools of images are then created utilizing either static or dynamic images (with or without auto-sizing — actually auto-cloning).

The upside to Ericom's VDI was that the client-side use was simple to configure and the updated Blaze code that Ericom sent came far closer to matching VMware's speed in our YouTube tests. Until Ericom's code stabilizes, we can't recommend it. It shows much promise but seems to be a work in progress rather than a finished product.

Quest vWorkspace 6: Strong security features

Like XenDesktop, vWorkspace works with many VM server platforms, including Virtual Iron, VMware ESX/vCenter, Microsoft Hyper-V, Parallels Virtuozzo, and also supports Microsoft Terminal Services. External (meaning remote) access uses a vWorkspace SSL proxy gateway that's installed on a dedicated gateway Windows 2000/2003 server in a physical or VM.

The gateway's ability to use X.509 certificates, trusted root certificates, and certificates generated from the Windows 2000+ certificate authorities was a strong security benefit. Most of the products we tested used either their own authentication or Active Directory's username/password/domain authentication regimen.

Desktop time availability was an additional option that made a lot of sense to us and was unavailable elsewhere.

The vWorkspace product requires Active Directory in place, and requires a number of policy and setup steps to get it running, similar in nature to Synchron OnDemand.

Once installed, the Quest vWorkspace Management Server can track applications, documents (even Web

pages) and the use of desktops — in our case, virtual desktops. From its console, we selected our platform, then created groups of VMs that we could make temporary (non-persistent) or persistent VMs for VDI use. The vWorkspace manager can also create relationships with individual machines (think blades in blade servers), or other hypervised platforms for VDI use.

Clients can connect through the vWorkspace AppPortal, a separately installed application, or via another application called WebAccess. Microsoft's IIS 6+ Web services must be alive, along with ASP.NET and .NET Services 2.0+. We used the AppPortal, which works only with 32-bit clients, and logged in via Active Directory authentication.

The clients aren't easy to set up to connect with the vWorkspace server/broker. In order to make it easier, you have to set up something on the default DNS server to point to a "provision.your.domain.here" entry. If WebAccess is installed, it should automatically download a configuration file, otherwise, you must enter the server IP address, and supply username/password/domain name credentials to configure the client to connect correctly to the service provided.

We had difficulty when auto-provisioning the copies of the Windows XP VM that were created. Numerous copies that were created didn't join the domain when launched, and we had to manually join the VM to the desired Active Directory Domain in about 10% of the copies.

The overall responsiveness of the client experience was good, but the YouTube video test showed lots of lags and video/audio synchronization errors. Non-multimedia use, however, was fine and reasonably fast.

The Quest vWorkspace has a larger-than-VDI control plane, and the control provided for VDI use was strong, as were the security considerations Quest gave to the product. Client-side use is good, if poised towards non-multimedia use.

MokaFive LivePC: VDI with a twist

MokaFive is an image and virtual desktop management platform that's a VDI crossover product for mobile desktop use. MokaFive is a VDI that's up-close-and-personal because it's downloaded or distributed as an image directly to a Windows PC or Mac and lives not on a VM server, but inside the client Windows PC or Mac workstation.

The image might be permanent, and it might go away after a single use or at the discretion of an administrator. There's no server hypervisor or connection brokering gateway to live with. It's all in the download.

MokaFive can be installed onto a Windows 2003 Server machine and can be used in a VDI platform (such as VMware ESX), although it's not necessary to use a hypervisor platform at all.

MokaFive is all about the LivePC image, which can be created from scratch, or converted from VMware images — although we found this was tough to make work and it created huge images. LivePC Creator and Player are used on the client side. Creator builds the image, and Player is used to connect the LivePC image (the image is downloaded to a user's machine before first use).

Creator is typically for admins only, but it could be for non-admins if the MokaFive admin lets other users create VMs. The created VMs are stored on the MokaFive server, but it's possible to add more Image Store locations by installing them on another machine.

The LivePC image that is initially created with MokaFive's Creator is downloaded or otherwise distributed to users through the MokaFive player application. The MokaFive Player contacts the MokaFive server for logon, policy control and updates, but can also be used in an offline mode using cached credentials. Policy controls can be embedded in the LivePC image to do things such as "Retain user apps after image restarts", "Allow automatic sign on", "Allow drag and drop between guest and host" and "Access to USB drive" as examples.

In order to download the image, you must log on with your username on the MokaFive Server's Web site and "subscribe" to your LivePC.

Go online

See how we tested VDI products, the impact of VDI on the network and a slideshow of VDI tools.

<http://tinyurl.com/ybu22c8>

See **VDI**, page 30



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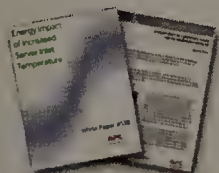
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■ VDI, from page 28

In either online or offline mode, the question of responsiveness of the session is moot, as it's executing in the client's hardware. This also means that sparse, lightweight Windows XP images can use less space to execute, and so we recommend stripping images to bare bones before building a LivePC image. Otherwise it will take forever to download a new image if you work from home or have a slow connection.

The MokaFive method is very lightweight, although it needs certain VMware pieces to make it work. Virtualization hypervisor server hosts are moot, because images execute as hypervised guests, yet can be updated from the MokaFive 'mothership' or just used in 'offline' mode until the next available server connection method is available. It's VDI, but with a twist.

Hardware-based VDIs

Wyse: Effective, but proprietary

Wyse makes a number of devices that can display Windows (or other operating system) sessions. We tested the Wyse V10L/VXO terminal device, which is a lightweight and book-sized terminal.

We believe that this device is aimed at value-added resellers and others that want to take the time to understand Wyse's unusual and proprietary configuration system; we've never seen anything like it before.

With the V10L terminal, you can display host sessions/VMs, but you can't copy anything onto the device's storage (there isn't any) or to the USB ports — or anywhere else save a printer port — without enabling this feature in an externally administrated control file.

The V10L box uses a standard monitor, keyboard and mouse — but the computer inside uses a proprietary operating system called WTOS for Wyse Terminal Operating System, Version 6.4. Barebones.

WTOS requires external configuration files (it saves very little in its onboard flash storage) that access an FTP server for 'INI' file configuration of the terminal's settings and access. As FTP is an insecure protocol at best, we feel the device provides vulnerability to organizations using it, even within secure network boundaries.

While the V10 is more difficult to configure than most proprietary devices we've seen, it did a great job of displaying Windows XP VMs on our VMware View 3/4 or XenDesktop configurations using RDP and ICA protocols — both atop VMware vSphere-hosted XP VMs.

Wyse also offers optional multimedia components specific to the Wyse TCX Multimedia Server (tested), TCX Bridge Sound Server (tested), TCX Multi-display options (not tested), TCX USB Virtualizer. Even with the Multimedia Server and Bridge Sound Server, we were unable to obtain satisfactory multimedia in our YouTube tests. Video was choppy and sound was intermittent and lagged the video over our test transport. It seemed to work better when we didn't use the extra Multimedia and Sound Bridge server software.

Pano Logic: Fast, easy, VMware-based

Pano Logic's Pano Cube is a very small designer-looking cube containing three USB jacks, VGA and audio/mic jacks. It ostensibly has no CPU or memory/storage inside, permitting it to be used strictly as a KVM+ access device. Pano Logic also makes a USB dongle called Pano Remote for Windows-based machines that logs them onto a VM as well, but we couldn't find any use for it. Pano Remote does have the ability to constrain data transfer between a host and client PC, including print data, but this was not extensively tested.

The Pano Manager provisions desktops through ESX/vCenter and also enables policy controls about what IO can go through the Pano Cube. It's possible to restrict printers and so on for any particular session. The Pano Gateway sets up connection brokerage relationships for VPN and proxy access from branch to 'home'.

Pano Device setup was very simple, as there's little to set. Pano Manager allows for persistent and non-persistent VMs to be used. VMs can be organized into collections that can host a number of VMs in which the Pano Cubes connect as a single logical unit. The collections can be user-based collections where VMs have specific relationships with users (like first cousins), Pano Cube or device-specific relationships (for example, this Cube always gets this

VM). If you don't want to do either, VMware View can manage the VMs.

The Cube Clients are extremely fast. They log on in just seconds, and were able to reproduce multimedia very well — even when we loaded the hosted VMware server down (a local host with 8GB of RAM) with all 10 Cubes sent to us.

The Pano Manager and Cube require VMware, but is a decent investment atop this expensive platform. Its simplicity is bliss, and it doesn't require VMware's vCenter to do the majority of its work. A baseline VMware server platform should do the trick, and it can use the "free" VMware ESXi platform.

NComputing X550: Low-cost, simple, effective

The X550 is a genuine old-fashioned terminal server with a twist. One or two PCIe ports are needed in a server box to host NComputing's Ethernet boards. A small, smartphone-size box called the XD2 has speaker, Ethernet, PS/2-style mouse and keyboard jacks and a VGA jack. Two PCIe cards yields 10 machines, and the 11th is the host computer itself. The host machine can run Windows XP, 2003 Server or 2008 Server editions.

Each Ethernet port connects in turn an XD2 box, where keyboard, mouse, monitor (in high resolutions) and even a speaker can be connected. The supported operating systems, controlled by NComputing's VSpace virtualization software, are Windows XP, Windows 2003 and 2008 Server editions. Each user of the X550 system gets their own session, as though they were a simple logged-on user of the operating system.

Users share the machine's Internet connection, and peripherals such as printers. Policy controls of the host operating system control user accessibility to installed applications, file shares and the security of the host operating system's configuration.

The benefit of the X550 (smaller versions are available with fewer ports) is low cost, and low number of instances of an operating system in use. If applications can handle multiple users in this configuration, application costs may be lower as well. The beauty is that VSpace allocates resources readily and simply, and virtualization and VM instances are spectacularly simple to control by comparison to VMware, MS Hyper-V, and even XenServer costs — even though XenServer is free.

We like the idea of a single box to run applications, although it represents a single point of failure, where the other virtualized platforms are often able to be made redundant through various schemes.

It's a small office/retail/branch scheme that we found worked simply and was difficult to load down with work in a multi-core desktop server box (we used a dual-core HP media server). The X550 is an old-school idea with a virtualization-controlled twist that may please some organizations' budget needs.

Overall

Our Clear Choice Test winner for VDI software is VMware View 4. It was certainly the best in terms of both client and administrative qualities, but it's also relatively expensive and it's captive to VMware vSphere 4.

We liked XenDesktop's egalitarian platform support, although XenDesktop was a little slower on the client side, and a bit more difficult to manage on the server side.

On the hardware side, we liked Pano Logic's approach. It was clean, simple and offered a lot of value in a small cube. We were impressed by ease of deployment, small profile, and excellent client responsiveness — especially in such a small device. ■

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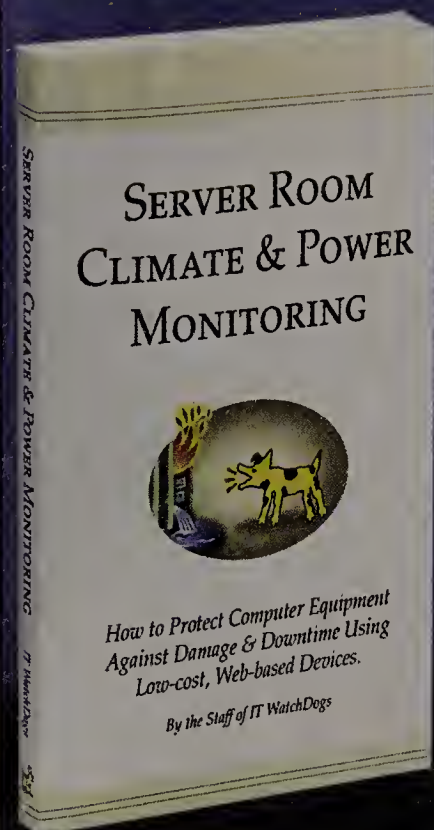
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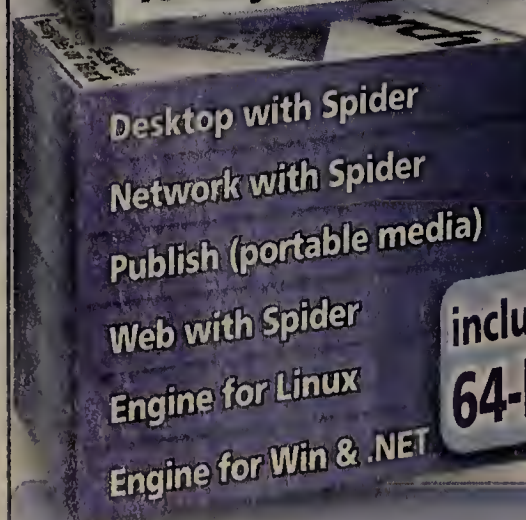
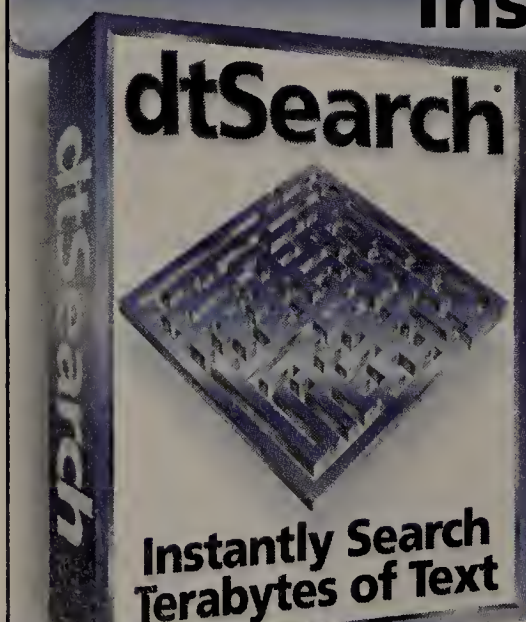


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BACKSPIN BY MARK GIBBS

Merry Christmas, Mr. Pettigrew

WHETHER YOU'VE JUST finished Hanukkah, about to dive into Christmas, getting ready for Kwanzaa, or about to jump into my favorite, Festivus (a single day, Dec. 23), the general air of happiness and fellow-feeling should be palpable . . . unless you are a soulless, financial behemoth with the warmth of an overdue tax notice and the cuddliness of a block of concrete studded with rusty nails.

Here's the story: On Dec. 15, four employees of the private client group at Fidelity Investments office in Fort Worth, Texas, (one of the world's largest providers of financial services and the country's biggest mutual fund sponsor), were canned for gambling at work. Let's be clear: that was just four days from the end of Hanukkah, 10 days away from Christmas, 11 days from Kwanzaa and eight days from Festivus.

So, were these ne'er-do-wells playing high stakes poker? No. Perhaps betting on horses? Nope. They were playing in a \$20 buy-in fantasy football league.

That's gambling? According to company spokesdroid, Vin Loporchio: "We have clear policies that relate to gambling. Participation in any form of gambling through the use of Fidelity time or equipment or any other company resource is prohibited. . . . We want our employees to be focused on our customers and clients." As a posting in Yahoo Sports noted, "Midcap funds, heck yeah! Football leagues, no".

Exactly how their "wild" gambling was discovered is unclear, but it appears an e-mail from one of the miscreants to another one of the culprits, Cameron Pettigrew, concerning the deficiencies of Buffalo Bills' quarterback, Trent Edwards, was the trigger (as NBC Sports noted, "If complaining about Trent Edwards was a crime, no one could work in Buffalo.").

The result of this message was that Pettigrew was called on the carpet and they "talked to me for about 90 minutes on everything I ever knew about fantasy football . . . They interrogated me as though I was some sort

of international gambling kingpin."

As many online commentators have pointed out, in the eyes of the law fantasy football has legal protections that sports gambling doesn't. To put that more clearly, the law says that fantasy football ain't gambling, but that apparently cuts no ice with Fidelity.

The company searched Pettigrew's PC and found two instant messages that referred to fantasy football. Combine those with the note about Edwards and, well, I think we can all agree, Fidelity had no choice . . . the man was obviously a scofflaw, a miscreant, a wanton libertine bent on the devil's work and cheating the company.

Now, the more cynical of us might think that given these hard times, these firings were most likely driven by a need to cut costs rather than address a violation of workplace rules. According to the *Star-Telegram*, Pettigrew had "never had a warning in his 2 1/2 years at the company [and] said he would have understood a warning or a dock in pay."

To add insult to injury, Pettigrew's 401(K) retirement plan wasn't vested (he hadn't worked there long enough to meet the federally mandated period of service), so he also lost out on thousands of dollars.

The trouble is that if Pettigrew and his fellow miscreants are to get any satisfaction they'll have to go to court against an opponent that has far greater resources.

So, in the season of good will following on from Hanukkah, just around the corner from Christmas and Kwanzaa, and a night or two's sleep from Festivus, I wish Pettigrew and friends as good a holiday as can be expected. The bottom line is that when you're looking under many corporate Christmas tree (or Festivus pole), don't expect to find kindness, fellow-feeling or justice. ■

Gibbs despairs festively in Ventura, Calif. Your tales of corporate culture to backspin@gibbs.com.



NETBUZZ BY PAUL McNAMARA

In this case, we're better off without privacy

LAST WEEK WE learned that the Supreme Court is going to decide whether naughty text messages sent by a cop via a taxpayer-funded pager deserved privacy protection or were fair game for the police chief who discovered and disapproved of them. The ruling is also expected to apply to private workplaces and various communication devices such as phones and computers.

While a California appeals court ruled the officer and his girlfriend were entitled to their sexting privacy, the prevailing opinion in my reading has been that business equipment is business equipment and as such anyone issued it must adhere to company usage policies at all times and expect personal privacy at no time. That's pretty much my opinion, too.

But it's not that simple, legally speaking.

As noted in the appeals court ruling, many employers — most, I'm going to guess — explicitly or through indifference do allow their employees to use company-issued phones and computers for personal communications. It just makes sense for both parties in most situations; employees don't want to carry (or pay for) multiple gadgets, and employers don't want their people running out to a pay phone every time the urge to call home (or a main squeeze) becomes overwhelming.

So, given this conveniently permissive state of affairs, privacy advocates will argue that it's perfectly understandable for employees to expect a measure of privacy even when yapping or texting on the company or taxpayer dime (this is what the lawyers are arguing in the Supreme Court case).

Sounds defensible, but (sigh) it's not that simple.

Employers not only have a right to dictate usage policies and limits, they

have an obligation — a legal obligation — to ensure that their employees do not use company equipment to abuse or injure others. Sexual harassment litigation and lawsuits over cell-phone use while driving are but two of the legal quagmires companies face routinely at least in part because they allow personal use of workplace devices.

So what about a compromise? Perhaps the Supreme Court should rule that employers have a right to pry only when probable cause exists that the employee has violated company policy or committed a crime. Otherwise, keep your eyes to yourself, chief.

Who could object? Well, I might, and a lot of employers will, too.

If the court attempts to split the baby in this way, debate and litigation will simply shift to what constitutes probable cause. Moreover, many employers will decide that they can't or don't want to be bothered parsing what constitutes probable cause. The result: More employers will simply prohibit personal use of company phones and computers.

Don't think it could happen? Oh, it could happen.

So I for one am hoping the Supreme Court draws a bright line here: It should rule that there is no right to privacy whatsoever when using a company- or taxpayer-issued communication device. This would best assure that most employers — including governments — will continue to grant reasonable personal use of such devices to their employees.

And, if at age 52, I should suddenly feel the urge to send my first text — and a naughty one, at that — I'll just have to do it using my own phone. ■

Since I don't text, you'll have to send e-mail. The address is buzz@nww.com. Keep it clean.



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